THE RUSSELL - BINSCARTH

PLANNING DISTRICT

BACKGROUND STUDY

Municipal Planning Branch
Dauphin, Manitoba
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Chapter I

INTRODUCTION

CHAPTER I

I. INTRODUCTION

1.1 Introduction

Within this study lies background data on the Rural Municipality of Russell and the two incorporated centres of the Town of Russell and the Village of Binscarth. Interest was expressed in the formation of a Planning District several years ago but it was not until recently that it became a reality. At the inaugural meeting in June, 1985, it was decided that the district was to be called The Russell-Binscarth Planning District.

There are many advantages to forming a district. A planning district provides a mechanism for sharing ideas, solving and avoiding problems and dealing with such mutual concerns as the settlement pattern for an area, the relationship between rural and urban municipalities and the conservation and protection of non-renewable resources. Planning districts deal with issues that transcend municipal boundaries; actions of an urban centre can carry over into the rural sector, and vice versa. For example, fringe development on the periphery of the urban centre can have adverse effects on the rural area. Planning districts can help in minimizing or alleviating these adverse effects.

Planning districts also help with centralizing planning at the local level. The next step beyond the background study is the district Development Plan and concommitant zoning by-laws. After adoption of these documents, a development officer (part of the requirement in the formation of a district) is charged with the enforcement of said by-laws. Thus, individual local political units retain the decision-making capacity with respect to land use regulations. To carry local autonomy further, the Minister of Municipal Affairs may delegate subdivision approving authority to the Planning District Board, acknowledging the Board's com-

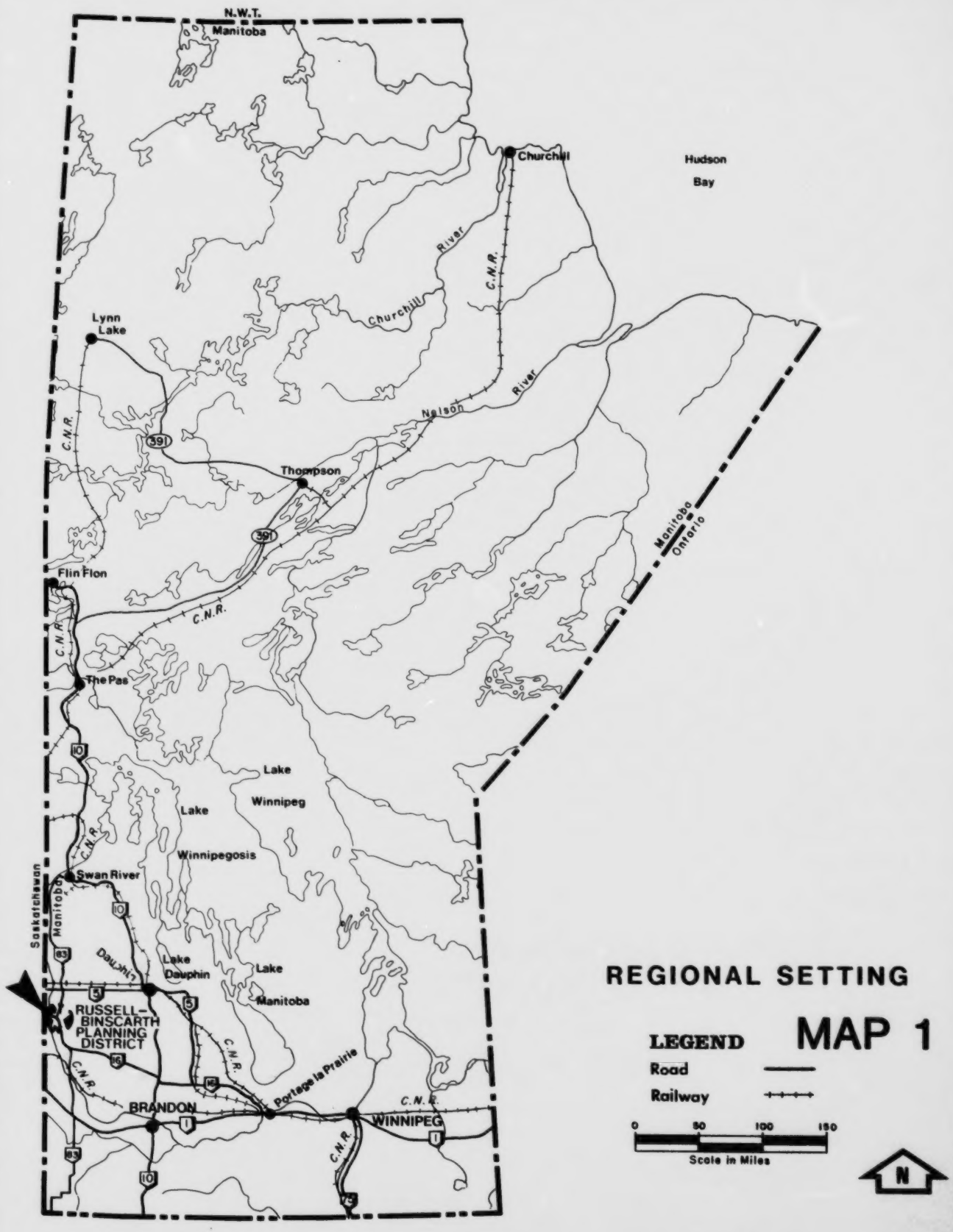
mitment to planning.

The Province of Manitoba sees merit in planning districts and is encouraging their formation by way of cash grants and provision of consultant and technical services from the Municipal Planning Branch.

This report contains principally a data base. It contains physical information relating to climate, land formations and land use characteristics. Socio-economic data concerning demography characteristics, the economic base and the municipal finance situation are also included. Reports by a consulting engineering firm relating to municipal servicing, as well as reports by various government departments, such as Agriculture and Natural Resources are appended to this report. Finally, planning implications and concerns identified in this study, a feature perhaps as important as the date base, completes the report.

1.2 Geographic Setting

The Rural Municipality of Russell is located in southwest Manitoba (Map 1). It is bordered by the Manitoba-Saskatchewan border on the west, by the R. M. of Shellmouth to the north, the R. M. of Silver Creek to the east and the R. M. of Ellice to the south. The principal incorporated centres are the Town of Russell and the Village of Binscarth which when combined with the R. M. of Russell, form the basis of the Planning District. Two minor centres of Millwood and Harrowby did serve a community role in the past but today are largely abandoned. The Millwood grain elevator closed in August, 1971 and Harrowby had seen more vibrant days.



REGIONAL SETTING

MAP 1

LEGEND

Road

Railway

0 50 100 150

Scale in Miles

N

RUSSELL-BINSCARTH PLANNING DISTRICT

Manitoba
Municipal Affairs
Municipal Planning

The Town of Russell is located 354 kilometres northwest of Winnipeg, 16 kilometres east of the Manitoba-Saskatchewan boundary.

In total, the R. M. inclusive of towns, encompasses approximately 216 square miles or 55,296 hectares.

The study area is well serviced by highways and railways. Highway 16, the Yellowhead Highway, bisects the region. The Yellowhead has a terminus in Winnipeg and in the Queen Charlotte Islands, B.C., a distance of some 1,973 kilometres. The Yellowhead is touted as a viable alternative to Trans-Canada Highway #1 as it offers few stopages, lower gradients, fewer vehicles and climate conducive to year-round travel (annual snowfall averages 404 cm, compared with 940 cm at Rogers Pass, Highway #1). Other principal highways are Provincial Trunk 45 and 41 as well as several Provincial Roads.

Both Canadian National and Canadian Pacific Railways serve the Russell-Binscarth area. Canadian National has the least amount of trackage. The Rossburn subdivision centres from the east and terminates in Russell. The Tonkin subdivision did serve the area until 1978. In this year, the trackage between Russell and McNutt, Saskatchewan was abandoned. Canadian Pacific on the otherhand has two subdivisions serving the area. The Russell subdivision originates in Binscarth, proceding north through Russell, terminating in Inglis. The Bredenbury line, one of CP's main lines, services the area from the southeast, passing through Binscarth, Millwood and Harrowby. Railways and highways are illustrated on Map 2.

1.3 Physiography

The Russell-Binscarth Planning District is located on the Second Prairie Steppe of the Great Plains of Manitoba. Manitoba has three physiographic zones - the Canadian Shield, the Great Plains and the Hudson Bay Lowland. The study area is locally known as the Western Uplands of Manitoba, and lies entirely within the watershed of the Assiniboine River. The Western Uplands area is agriculturally productive with lakebed deposits (glacial Lake Agassiz) forming fertile areas. Minerals may include bentonite, clay, lignite, sandstone, potash and salt. The specific subdivision of the Western Uplands in which the District is located is the Newdale Till Plain. Terrain is undulating to rolling with numerous wetlands. Surface deposits are characterized as glacial till consisting of ground and end morraine and kettle holes. Morraine consists of a mixture of boulders, cobbles, gravel, sand, silt and clay, deposited by glaciers upon melting.

Soils developed on glacial till deposits vary in agricultural value in accordance with their topography. The best soils are found on the smoother topography, in areas where excess salts are not a problem, and on rolling topography which is characterized by long, gentle slopes. These soils are generally thicker, more uniform in texture and less susceptible to water erosion than those in the strongly undulating areas or where excess morrainal deposits are found. The predominant soil type is that of the Newdale series. Newdale has moderate to moderately rapid runoff and permeability is moderately slow. The final product is soil which has good productivity.

The Russell-Binscarth District varies in elevation from 572 metres a.s.l. in the northeast section of the region to below 404 m.a.s.l. at the Assiniboine River.

To gauge these figures within the regional context, the highest point in Riding Mountain Park is 747m.a.s.l., while the elevation of Lake Manitoba is 248m.a.s.l.

1.4 Climate

The climate of the area is typically continental with large seasonal temperature ranges and moderate precipitation. During the winter season, continental Arctic air causes severe cold weather in December through February, with maritime Arctic air bringing most of the precipitation. In summer, the area is generally dominated by maritime Arctic of maritime Polar air, with occasional intrusions of maritime Tropical. The latter front is the principal source of rainfall during the growing season.

Mean annual temperature for Russell is 0.8 degrees C (33.4° F) and mean annual precipitation is 451.2 mm (14.8 in.) (Table 1-1). The frost free period (0 degrees C) is 112 days with the mean last spring frost (0 degrees C) on May 30 (10% probability on June 15) and the mean first fall frost is September 10 (10% probability on August 23). Binscarth exhibits similar temperature and precipitation measures as Russell, but has a shorter growing frost-free period, 99 days.

Table 1-1 Climatic Data, Russell, Manitoba

	J	F	M	A	M	J	J	A	S	O	N	D	Avg.
Temperature °C	-20.4	-15.7	-10.2	2.0	10.2	15.3	18.0	16.6	10.4	4.5	- 5.9	-14.9	0.8
Precipitation mm	25.7	22.1	30.2	23.2	40.4	71.3	58.9	60.5	50.1	24.1	19.5	25.3	37.6

(Total precipitation = 451.2)

Source: Environment Canada, Atmospheric Environment Service, Canadian Climate Normals 1951 - 80

1.5 Vegetation

The vegetative cover of the study area consists of predominantly aspen parkland with mixed prairie grasses and herbs. Trembling aspen occur surrounding depressions to the mid-slopes, being replaced by grasses as the elevation increases. Balsam poplar is common in the moister locations such as the river channels. On alluvial soils, the white elm, green ash and Manitoba maple are located. There has been a trend to woodland invasion of the prairie. Due to the prevalence of vegetative cover interspersed with agricultural land, the Russell-Binscarth Planning District can be classified as wooded cropland.

1.6 Historical Development

Although there were undoubtedly people living in the Russell-Binscarth area in the early nineteenth century, the first recorded settlers arrived in the late 1870's. Western Manitoba was opened up to settlement, occasioned by the surveying of a trans-Canada railway line. The Russell-Binscarth area was a natural choice for settlement because of the proximity of existing transportation routes, the Pelly Trail and the Fort Ellice-Edmonton Trail. The Pelly Trail passed directly through the district, while the Fort Ellice Trail was located south of the district. Settlers from Ontario, Southern Manitoba and northern United States began the trek to the area for settlement and employment. The construction of a trans-continental rail line began in Winnipeg in 1880 and by 1883, extended into the Northwest Territories (the present province of Saskatchewan). Employment was gained by surveying as well as in the construction of branch rail-lines by private firms utilizing Dominion land grants and municipal bonuses.

Respecting the Russell-Binscarth district, the most prominent settler was Major

Charles Arkoll Boulton (1841 - 1899) famous for leading the Portage party to free the prisoners of Louis Riel in 1870 and later known to be sent with his Scouts to quash the North-West Rebellion of 1885. In 1880 Boulton and two others settled in the present R. M. of Boulton, intent on taking up land along the proposed line of the transcontinental railway. The spring of 1881 saw the moving of Boulton's log home fifteen miles south and west into the present Town of Russell. Boulton had purchased land along the proposed C.P.R. route and by the summer of 1881 he had plans to set up a business and service centre for the new settlement. A townsite was surveyed according to his instructions, and an offer of ten lots to the Hudson's Bay Company prompted the construction of a company store near Boulton's home. At this time the settlement was known as Shell River. By 1883, a second store and post office, a town hall and a school had been established on the surveyed site, which was to form the basis of the future Town of Russell.

Increased settlement led to the formation of a County Council. By 1884, the district had been divided into four municipalities and Boulton became the first Reeve of the Rural Municipality of Russell. He served for one year, and was to occupy that position for another term in 1899. The Village of Russell was incorporated in 1907 and the Town of Russell was incorporated in 1913. Town boundaries remained unchanged until 1968 when approximately 110 acres were added to the southern boundary of the town. The Town of Russell had its name originating with either one of two individuals. One source suggests that the town was named after Lindsay Russell, the Surveyor-General at the time of Boulton's exploration. Another source indicates the town was named after General Lord Alexander George Russell, commander of the forces in Canada from 1883 - 1886. As a tribute to Boulton, his home "The Manor" built in 1894 stands as a reminder of the town's

founder.

Like Russell, the present Village of Binscarth came into being with immigrant settlers. In 1880, the Scottish, Ontario and Manitoba Land Company sent out Mr. A. Bain and Mr. W. B. Scarth to investigate the possibility of securing a tract of land for settlement. The purchase of three townships established Binscarth Colony Farm in 1882, specializing in raising thoroughbred cattle. Two suggestions have been made regarding the naming of Binscarth. One source suggests it was named after William Bain Scarth, the negotiator sent out in 1881. Another plausible suggestion is of a Norse derivation -- "bin" meaning a farm and "scarth" meaning a cleft in the hills.

As well as the establishment of two major centres within the planning district, smaller settlements were established as well. Millwood was probably the most prominent with the district, being settled in the early 1880's, and having 90 residents by 1890. Land speculators expected a great future for Millwood, in the form of surveying 200 lots. Encouragement for growth was provided by the building of the Manitoba and Northwestern Railway. Millwood was unique in the district in terms of its economic base. All communities were centered on agriculture or construction, while Millwood was engaged in industrial activities. Harnessed water power from the Assiniboine River enabled the construction of a Roller Process flour mill as well as a sawmill (15,000 feet per day capacity). Significant attributes were present to attract a grain elevator, hotels, general store and other businesses. Millwood today is a shadow of its past; a damaging flood wiping out the local industry, and the absence of a train station, contributed to its demise.

1.7 Planning Implications

The physical location of the Russell-Binscarth Planning District, relief, soil, structure, vegetative cover, climate factors and historical development can all affect the present and future development of the area. Planning is inherently controlled or limited by physical factors.

An association exists between historical development and location of the district. Settlement patterns established many decades ago determined the location of the two major urban centres. Trails and major trasnportation routes laid out in the past form parts of modern day highways, roadways and railways. Russell emerged as a regional centre for trade isolated from the major town of Dauphin by Riding Mountain. This is still the case today. Another positive factor favourable to the Russell-Binscarth area is its location with respect to transport. Highway 16, the Yellowhead route, carries a high traffic volume favoured over TransCanada Highway #1 for heavy loads travelling into British Columbia and also as the major thoroughfare to Saskatoon, Saskatchewan and Edmonton, Alberta. The nature of the traffic lends itself to roadside activities such as recreation sites and truck stops. The future could also see the twinning of the Yellowhead route, increasing traffic volumes even further. Another favourable feature is the servicing of the district by both major railways, uncommon in most rural towns. Trade with Saskatchewan is also facilitated by the close proximity to the border.

Glaciations in the past left the district with rolling terrain and numerous depressions. This type of landform may have adverse effects on some intensive agricultural activities, but naturally leads itself to mixed farming - cattle, oil seeds and grains. This diversity can be seen as having a stabilizing effect on the

agricultural economic base; climatic conditions or insect infestation which may diminish single enterprise farms need not adversely affect this area. Glacial depositions richly enhanced the district with fertile soils. According to the Agro-Manitoba Information Package, Manitoba Crop Insurance Corporation graphs indicate the Russell-Binscarth area wheat yields, based on a 35 year average, as between 25 - 31 bushels per acre. The provincial average is 22.5 bushels/ acre. One negative feature is that the district is divided by the Assiniboine River.

Crop yields depend on a combination of factors, soils and climate being among the most important. While crop yields are high, a limiting factory is the short growing season. However, a variety of agricultural activity (mixed farming) minimizes the economic consequences of a short growing season.

The vegatative cover determined by physical and climate conditions is an integral part of the natural environment. It can be seen negatively as a hinderance to agricultural practises but also has positive attributes. Vegetation can help to protect the soils from water and wind erosion. Vegetation, in particular trees, provide shade for buildings and because it can't be farmed, may serve as a location for housing. A third bonus of vegetative cover is a natural food source for animals including wildlife. A food source will attract deer and other wildlife enhancing the recreational capability of the district. River flats in particular are conducive to game and waterfowl hunting.

In summary, the majority of features of the physical environment help to ensure the longevity and vitality of the Russell-Binscarth District. In particular the

geographic location, transportation systems, soil structure, vegetative cover and the variety of agricultural activities caused by physical factors, serve to create an atmosphere capable of attracting and sustaining a population.

A factor which may restrict growth in the Rural Municipality is the restriction of access to the west side of the Assiniboine River. The river's barrier effect may somewhat inhibit the potential development of that area.

Chapter II

POPULATION

CHAPTER II

II. POPULATION

2.1 Introduction

In Chapter I, physical features pertaining to the Russell-Binscarth Planning District were discussed. For the most part, it was determined that enough natural amenities were present to make this an attractive place to live. In Chapter II, we will examine population changes over several census surveys. The completion of the socio-economic data will conclude in Chapter III with the study of the economic basis of the community.

In all planning studies, it is crucial to examine community demographics. Population trends, age and sex distribution are important indicators of the nature of the community. For example, an abundance of women 25 - 34 years of age may indicate an increase in the amount of young children in the near future. On the other hand, an increasing amount of citizens in upper age brackets may necessitate amenities such as a Senior Citizens Activity Centre or housing. In short, the population structure and total population trends have a tremendous effect on infrastructure needs, housing, education, health care, recreation and most importantly, the ability to pay for improvements.

2.2 Size of Population

There has been a cyclical change in population within the R. M. of Russell and the two incorporated centres. Data for 1951 to 1981 is depicted numerically in Table 2-1 and graphically in Figure 1.

Table 2-1 Historical Population Growth

	1951	1956	1961	1966	1971	1976	1981
Town of Russell	1100	1227	1263	1511	1515	1524	1660
R. M. of Russell	1200	1088	1046	1087	833	710	653
Village of Binscarth	451	452	456	490	478	430	472
Totals	2751	2767	2765	3088	2826	2664	2785

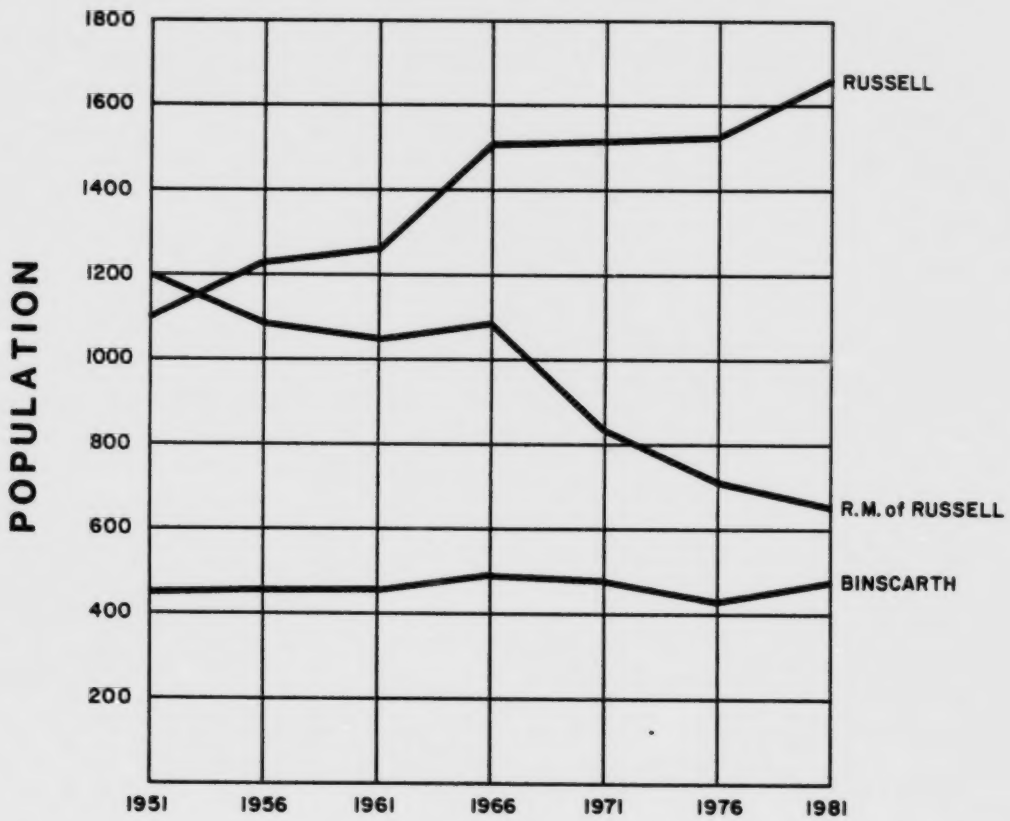
Source: Statistics Canada and Parkland Regional Development Inc.

The R. M. of Russell has experienced a steadily decreasing population, with the exception of 1966. Russell and Binscarth have largely shown an increasing population with Russell showing the most dramatic increase. A more representative method of depicting the population changes is to compare the figures on a common basis. Tables 2-2 and 2-3 illustrate the population change by percentage in 5 year increments, 1956 to 1981. It is interesting to note that there has been very little overall change in population size from 1951 - 1981. There were periods of increase and decline but, generally, the population size has shown little fluctuation.

Table 2-2 indicates the rate of growth for Binscarth and Russell, in comparison with Roblin and Brandon. Roblin was selected because of its proximity to Russell and a similar population size. Brandon is a regional service centre serving all of southeast Manitoba. The data indicates all four communities have experienced growth with Russell and Binscarth being slower than Roblin and Brandon except in the most recent census period, 1976 to 1981. Brandon is expected to continue to grow due to strong locational preferences in major urban centres. Roblin has seen

FIGURE 1

POPULATION CHANGE 1951-1981



YEAR

Table 2-2 Urban Population Comparisons

Year	Binscarth		Russell		Roblin		Brandon	
	Population	% Change	Population	% Change	Population	% Change	Population	% Change
1956	452		1,227		1,173		24,769	
1961	456	.9	1,263	2.9	1,368	16.6	28,166	13.7
1966	490	7.4	1,511	19.6	1,617	18.2	29,981	6.4
1971	478	- 2.4	1,515	.3	1,741	7.7	32,500	8.4
1976	430	-10.0	1,524	.6	1,974	13.4	34,481	6.1
1981	472	9.8	1,660	8.9	1,953	- 1.1	36,242	5.1
Total Change								
1956 - 1981	20	4.4	433	35.3	780	66.5	11,473	46.3

Source: Statistics Canada

Table 2-3 Rural Municipality Population Comparisons

Year	R. M. of Russell		R. M. of Shell River		R. M. of Dauphin	
	Population	% Change	Population	% Change	Population	% Change
1956	1,088		2,099		4,345	
1961	1,046	- 3.9	1,837	-12.4	3,949	- 9.1
1966	1,087	3.9	1,668	- 9.2	3,547	-10.2
1971	833	-23.4	1,432	-14.1	3,132	-11.7
1976	710	-14.8	1,271	-11.2	3,042	- 2.9
1981	653	- 8.0	1,161	- 8.7	2,943	- 3.3
Total Change						
1956 - 1981	- 435	-40.	- 938	- 44.7	-1,402	-32.3

Source: Statistics Canada

a decrease in the most recent census period, a characteristic not noted in Russell and Binscarth.

Table 2-3 compares population change within three selected rural municipalities. The R.M. of Russell is compared with the R. M. of Shell River; the Town of Roblin is the heart of this municipality. A second comparison is with the sub-regional centre, the R. M. of Dauphin. The ability to retain a population in the rural municipality depends on several factors, some being the stability of the agricultural base, location, or the presence of a trade or service centre closeby. For this reason, the R. M. of Russell is compared with the R. M.'s of Dauphin and Shell River.

Data from Table 2-3 indicates that rural population has been decreasing. The trend across the prairie provinces has been towards a decreasing rural population in favor of an increasing urban community. Losses in the R. M. of Russell have presumably been a gain to the Town of Russell and the Village of Binscarth. The R. M. of Dauphin has seen the lowest loss probably because of the demand for small non-agricultural holdings. Because Dauphin is a sub-regional centre, many people choose to locate in proximity to the goods and services associated with a town of this size. The data for Russell and Shell River R. M.'s indicates that the rate of population has been decreasing since 1971.

The essence of this section is that the Russell-Binscarth Planning District has had a cyclical growth, as indicated by Table 2-4.

Table 2-4 Planning District Population Change

Year	Population	Percentage Change
1956	2767	
1961	2765	- .07
1966	3088	11.7
1971	2826	- 8.5
1976	2664	- 5.7
1981	2785	4.5
Total Change 1956 - 1981	18	0.7

Over a 25 year period, the area has seen as much as 11.7 percent growth and a decrease of 8.5 percent. In 25 years, an increase of 18 persons was noted. As Tables 2-2 and 2-3 indicate, the rural municipality has decreased in population while increases have been noted within the two incorporated urban centres.

Having discussed the generalities of the population change within the planning districts, the next investigation will entail a detailed study of the composition of the rural population base followed by a similar study for the urban centres.

2.3 Rural Municipality Population

The age and sex distribution for both 1976 and 1981 is shown graphically in Figure 2 and numerically in Table 2-5. Calculations indicate that the average age in the rural municipality for both sexes lies in the 25 - 34 age category. It can be deduced that the population is generally young. Examination of the pyramid by age groupings does indicate a stability or increase in the youngest

Table 2-5

Population Distribution
R. M. of Russell

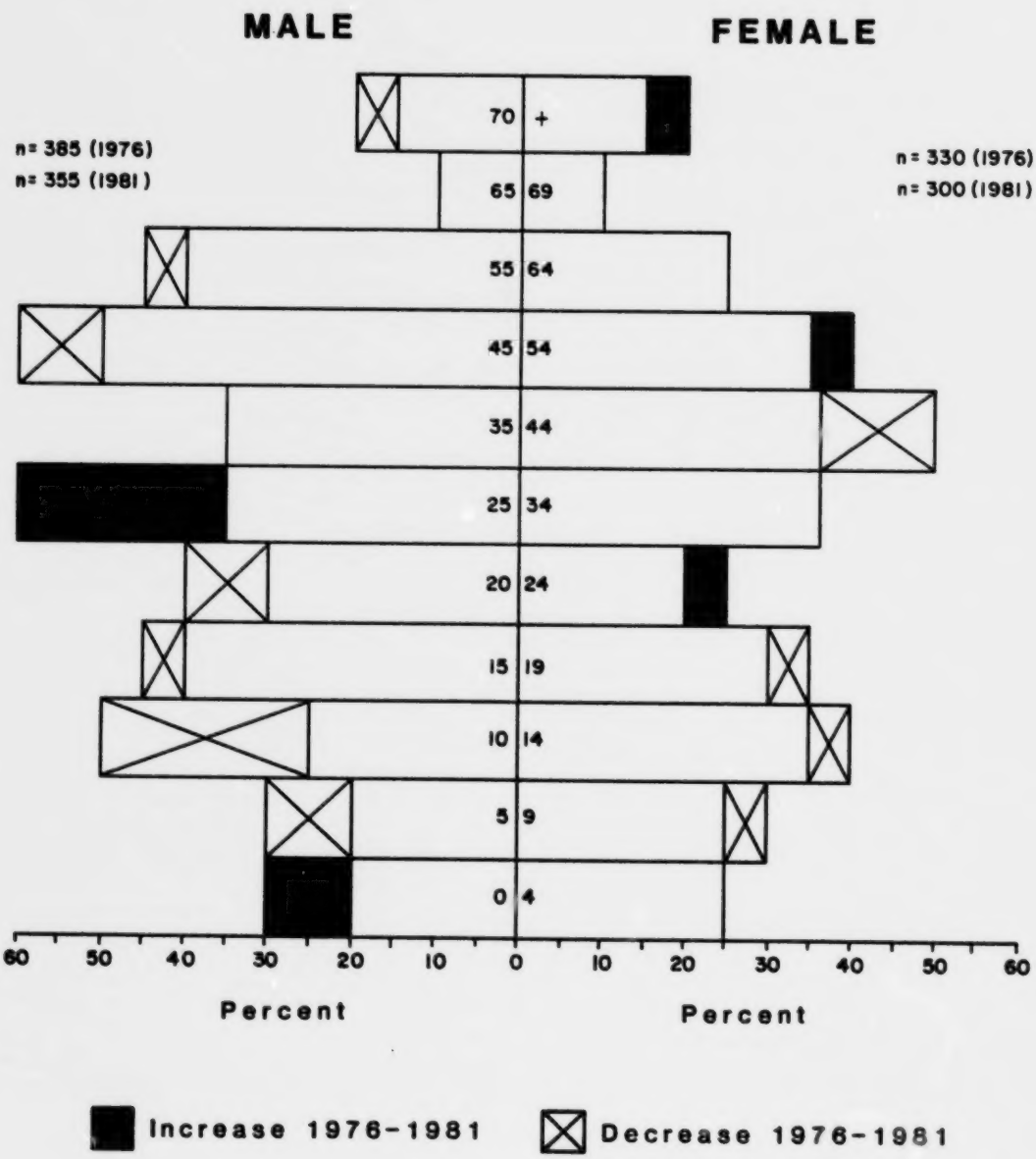
Age Grouping		Number 1976	Number 1981	Difference
0 - 4	m	20	30	10
	f	25	25	0
5 - 9	m	30	20	- 10
	f	30	25	- 5
10 - 14	m	50	25	- 25
	f	40	35	- 5
15 - 19	m	45	40	- 5
	f	35	30	- 5
20 - 24	m	40	30	- 10
	f	20	25	5
25 - 34	m	35	60	25
	f	35	35	0
35 - 44	m	35	35	0
	f	50	35	- 15
45 - 54	m	60	50	- 10
	f	35	40	5
55 - 64	m	45	40	- 5
	f	25	25	0
65 - 69	m	10	10	0
	f	10	10	0
70 +	m	20	15	- 5
	f	15	20	5

Source: Statistics Canada

FIGURE 2

R.M. OF RUSSELL POPULATION BY AGE/SEX

1976 and 1981



age grouping, 0 - 4 years of age. Perhaps a trend to increased childbirth is beginning to emerge. Obviously, this was not the case prior to 1981 as the total number of school age children was significantly lower. The population of males between 5 and 24 years old was lower by 50 in 1981 than in 1976. Female population was reduced by 10 during the same time frame.

A phenomenon associated with many rural centres is the loss of high-school graduates to the city in order to seek out employment or further education. Unemployment rates naturally are always highest for your adults between 18 and 24 years old. Insufficient opportunity in rural regions almost always results in a migration to major urban centres for males, a loss of 10 had occured between 1976 and 1981 in the age grouping of 20 - 24.

A positive observation from this pyramid is the increase in males in the 25 to 34 range. This age grouping is likely engaged in agricultural activities, perhaps carrying on from their fathers. The number of females in this category is stationery. Possibly the increase in infants (0 - 4 years) can be explained by the stability of the population of child-bearing age.

Beyond the 25 to 34 age category, minor variations are noted, but are indicative of a non-transient population.

2.3 (a) Family/Household Size

Trends in household size and number when combined with the current population structure can have planning implications. A national trend of late has been towards a decline in family size and an increase in the number of household units.

This national trend is also evident in the R. M. of Russell, as indicated by Table 2-6.

Table 2-6 Family and Household Size - R. M. of Russell

Year	No. of Households	Avg. Household Size	No. of Families	Avg. Family Size
1971	215	3.6	190	4.0
1976	205	3.4	175	3.7
1981	215	3.0	175	3.3

Source: Statistics Canada

Census definition of a family is a unit consisting of either a husband and wife (with or without children) or a single parent with one or more children living in a home. A household may consist of unrelated persons or several families sharing the same dwelling.

The implications of the decreasing family size and increasing number of households is the need to increase the housing stock. However, given the reduction in the number of persons 5 to 19 years old, in perhaps 5 to 20 years this trend may be held in abeyance.

2.3 (b) Farm/Non-Farm Population

Historically, rural regions were totally populated by those engaged in agriculture. With the passage of time, technological advances such as railways and grain elevators resulted in the establishment of service areas. These areas attracted other activities, eventually evolving into populated centres such as the Village

of Binscarth and the Town of Russell. Citizens who desired a more urban life-style migrated from the rural region to the urban area. This trend of a decreasing ratio of farm population is continuing today as indicated by Table 2-7. The orientation towards an urban Manitoba is aptly illustrated in the provincial trend figures.

Table 2-7 Farm/Non-Farm Population

R. M. of Russell & Unincorporated Centres	Total Population	Farm	% Farm of Total
1971	833	689	82.7
1976	710	518	73.0
1981	653	454	69.6
Manitoba			
1971	988,245	131,200	13.3
1976	1,021,510	101,455	9.9
1981	1,026,241	98,375	9.6

Source: Statistics Canada

The technical revolution has also resulted in larger, more economical farm units requiring fewer operators.

Another factor contributing to an increase in the non-farm population is the trend to rural residential development. Non-farming oriented citizens are often desirous of large lots, low traffic volumes and fewer building restrictions leanding themselves to the selection of a rural location, often on the fringe of a town or village. The magnitude of this phenomenon in the Russell-Binscarth Planning District will be discussed in Chapter IV.

2.4 Urban Population

As mentioned earlier, both urban centres have increased in population with migration from the rural area. This is a typical trend in Manitoba as discussed earlier. Population pyramids for Russell and Binscarth (Figures 3 and 4) indicate a uniformly aging population. An accompaniement to these Figures is Tables 2-8 and 2-9.

As to be expected, the average age for the urban resident is higher than for the rural region. The median age in Binscarth for both men and women is in the 35 to 44 category. In Russell, the median age for women is the same, 35 to 44, but lower (25 to 34) for men. This is explained by the large number of service industries in Russell.

Closer scrutiny of the pyramids indicates a trend to newborns, a trend also identified in the rural municipality. Perhaps the birthrate is again on the increase as it was following World War II. These post World War II children, known as "baby boomers", are now at the age when they are having children themselves, explaining the increase in birthrate.

As a cautionary note, it is inaccurate to compare the length of the bars of the pyramid between Russell and Binscarth. Binscarth's population distribution is expressed in actual numbers, while Russell is plotted in percentages, due to respective size of their populations. A unit of 3 persons for Binscarth is the equivalent of 8 for Russell.

Continuing with population distribution, a positive feature is noted in the number

Table 2-8

Population Distribution
Town of Russell

Age Category		Number 1976	Number 1981	Difference
0 - 4	m	50	60	10
	f	40	55	15
5 - 9	m	55	60	5
	f	60	50	- 10
10 - 14	m	65	65	0
	f	70	60	- 10
15 - 19	m	70	75	5
	f	60	70	10
20 - 24	m	50	50	0
	f	35	50	15
25 - 34	m	80	110	30
	f	95	100	5
35 - 44	m	65	75	10
	f	75	85	10
45 - 54	m	75	80	5
	f	90	75	- 15
55 - 64	m	70	75	5
	f	100	110	10
65 - 69	m	50	45	- 5
	f	40	45	5
70 +	m	90	115	25
	f	135	150	15

Source: Statistics Canada

FIGURE 3

TOWN OF RUSSELL POPULATION BY AGE/SEX

1976 and 1981

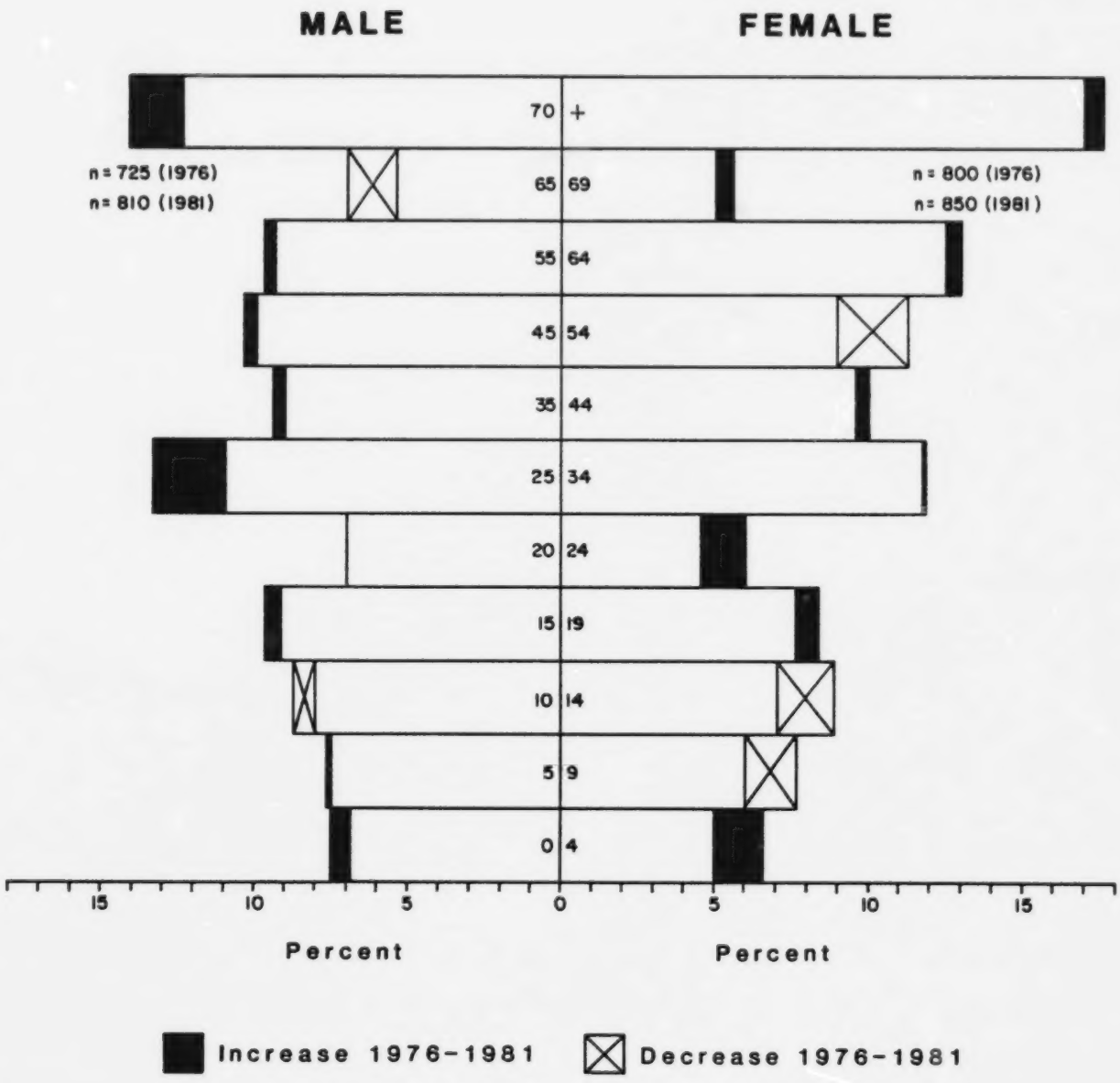


Table 2-9

Population Distribution
Village of Binscarth

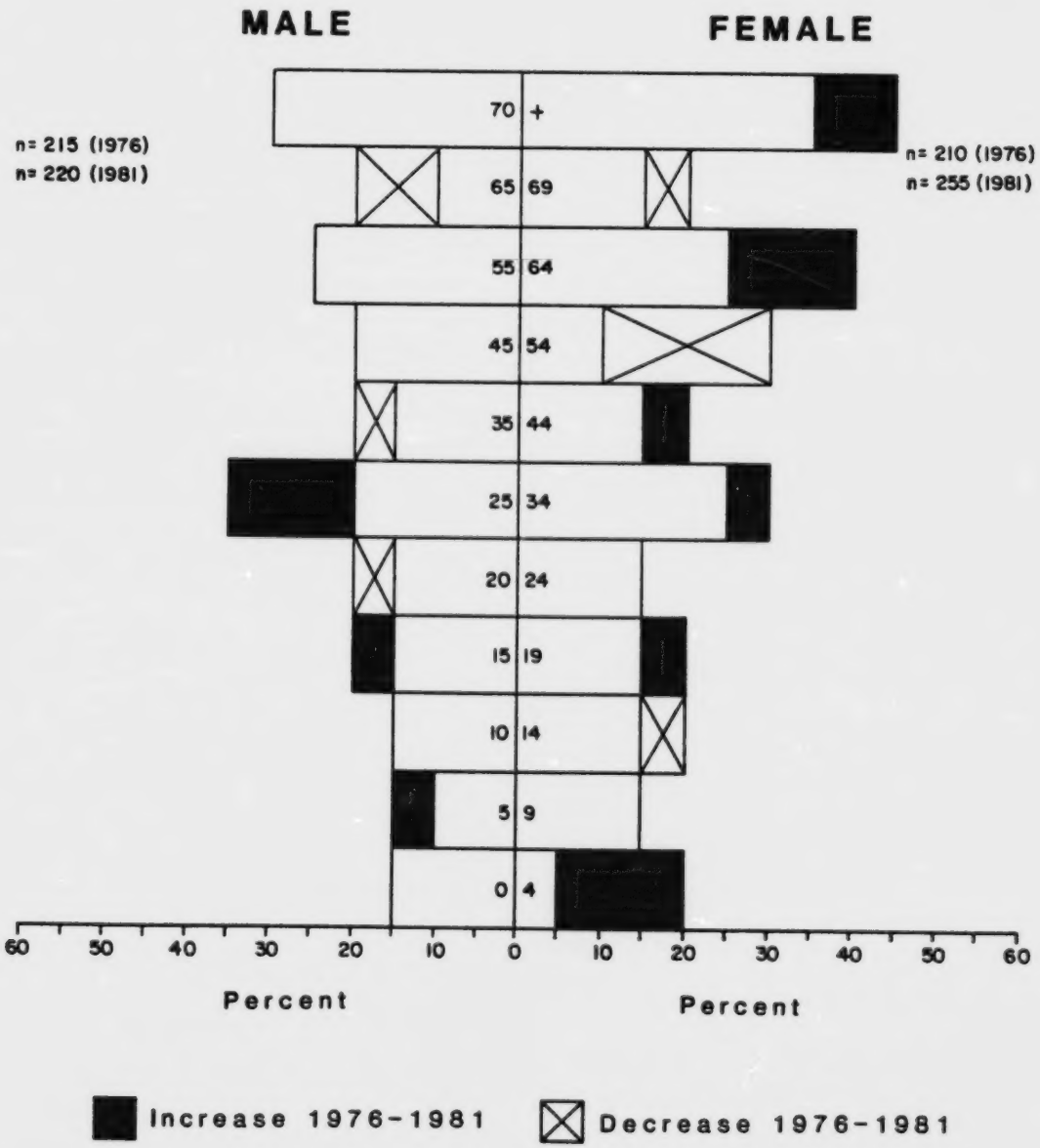
Age Category		Number 1976	Number 1981	Difference
0 - 4	m	15	15	0
	f	5	20	15
5 - 9	m	10	15	5
	f	15	15	0
10 - 14	m	15	15	0
	f	20	15	- 5
15 - 19	m	15	20	5
	f	15	20	5
20 - 24	m	20	15	- 5
	f	15	15	0
25 - 34	m	20	35	15
	f	25	30	5
35 - 44	m	20	15	- 5
	f	15	20	5
45 - 54	m	20	20	0
	f	30	10	-20
55 - 64	m	25	25	0
	f	25	40	15
65 - 69	m	20	10	-10
	f	20	15	- 5
70 +	m	30	30	0
	f	35	45	10

Source: Statistics Canada

FIGURE 4

VILLAGE OF BINSCARTH POPULATION BY AGE/SEX

1976 and 1981



of individuals in the 25 to 34 age category. In both Binscarth and Russell, the highest population of males is in this grouping. While the female population is also showing no sign of decline. The number of people in this age grouping is, no doubt, a result of the "baby boomers" moving up the age scale. Nevertheless, it is encouraging to see such a strong grouping of yourngger people in the statistics particularly when it is consistent in all three areas i.e. Town of Russell, Village of Binscarth and R. M. of Russell.

The balance of the pyramid, with one exception, does not exhibit any particular trend. The senior citizen population locate within incorporated centres because of the quantity of services available, such as housing and health care. Migration from the rural area to the urban area thus causes a strong representation in the 65 + groupings. One exception to the consistent trend is indicated by the date of the urban areas, that a loss of females in the age grouping 45 to 54.

2.4 (a) Family/Household Size

The family/household size for Russell and Binscarth indicates an increasing number of households, a decline in household size, and a stable family size. A family is defined as a unit consisting of either a husband and wife (with or without children) or a single parent with one or more children living in a home. A difference exists in a household, in that a household may consist of unrelated persons or several families sharing the same dwelling. Data for Russell and Binscarth is presented in Table 2-10.

Both Russell and Binscarth have a lower than average household size and family

size, compared with the total population of Manitoba in 1981 (2.8 and 3.2, respectively).

Table 2-10 Family and Household Size in Incorporated Centres (1966 - 1981)

Year	No. of Households	Avg. Household Size	No. of Families	Avg. Family Size
Russell				
1966	470	3.1	369	3.4
1971	520	2.9	388	3.3
1976	555	2.6	405	3.1
1981	630	2.5	440	3.1
Binscarth				
1971	170	2.4	120	3.3
1976	170	2.5	120	3.0
1981	190	2.4	130	3.0

Source: Statistics Canada

2.5 Future Population Projection

Accurate projections of future population growth are extremely important for long term planning. Population size determines need for housing stock and infrastructure needs. Population composition determines needed services (health care, education) and housing types. It is difficult to accurately project population trends due to a number of variables, the most prominent being economic stability. The introduction or termination of a major employment base can affect the community.

The Russell-Binscarth area contains a large quantity of good quality potash deposits. Studies indicate that annual production can be expected to be 2 million tonnes per year for more than 30 years. A potential to increase yields also exists. When this development occurs, it will have a tremendous impact on the district as the 5 year construction phase is forecasted to create 1600 person years of employment (which equals 320 people per year) of direct employment. At construction peak, as many as 900 people will be employed on-site. When the world-class mine is in operation, 350 people will be employed on a regular basis. A development of this magnitude is sure to affect the community. Single persons as well as families will locate within the district, necessitating new housing and increased services. The population increase will be more than the number of jobs created, in family circumstances. The time for construction is undetermined as yet, but indications suggest world markets may require new potash sources by the turn of the century. Factors could advance or retard this estimate.*

Assuming that no drastic economic activity changes, two population forecasts have been made. The first is based on the average numerical increase over 5 years based on the past 25 years and the second is based on the average growth rate over 5 years also based on the record of the past 25 years. Both forecasts are based on historical trends and conceal any minor fluctuations that may have occurred over the past 25 years. The projection is shown on Table 2-11.

* Province of Manitoba and Canamax Resources Inc., The Manitoba Potash Project May, 1985.

Table 2-11 Population Projection

Russell

Average increase /5 years = 87
Growth rate over 5 years = 7%

Actual	Projected Avg. Increase	Growth Rate
1956 - 1227	1986 - 1747	1776
1961 - 1263	1991 - 1834	1900
1966 - 1511	1996 - 1921	2033
1971 - 1515	2001 - 2008	2176
1976 - 1524		
1981 - 1660		

Binscarth

Average increase /5 years = 4
Growth rate over 5 years = .9%

Actual	Projected Avg. Increase	Growth Rate
1956 - 452	1986 - 479	476
1961 - 456	1991 - 483	480
1966 - 490	1996 - 487	485
1971 - 478	2001 - 491	489
1976 - 430		
1981 - 472		

Table 2-11 (con't)

R. M. of Russell

Average decrease /5 years = 87
Growth rate over 5 years = -8%

Actual	Projected Avg. Decrease	Growth Rate
1956 - 1088	1986 - 566	601
1961 - 1046	1991 - 479	553
1996 - 1087	1996 - 392	509
1971 - 833	2001 - 305	468
1976 - 710		
1981 - 653		

The table illustrates moderate growth for each individual urban municipality and a decrease for the rural municipality. Both urban areas show a moderate rate of increase, approximately 1.4% per year for Russell and .2% per year for Binscarth. The rate of the decrease in the R. M. will depend on the stability of the agricultural economic base and the state of non-farm residential development but the data shows a yearly decrease of 1.6%. Taken in total, the Russell-Binscarth Planning District may contain between 2776 and 3148 people, a slight loss to a 13% gain over the 1981 census population of 2785. Population projection for 1996 is contained in Table 2-12. Again, the potash mine could completely alter these figures.

Table 2-12 Population Projection - District

	1981	1986	1991	1996	2001
Town of Russell	1660	1747/1776	1834/1900	1921/2033	2008/2176
Village of Binscarth	472	479/ 476	483/ 480	487/ 485	491/ 485
R. M. of Russell	653	566/ 601	479/ 553	392/ 509	305/ 468
Total	2785	2792/2853	2796/2933	2800/3027	2804/3129

Assuming the highest increase in the district occurs (363 persons) by 1996, or 24 people per year, an increase of 8 dwelling units per year within the district will be necessary. This calculation is based on the current 3 people per household, but due to decreasing household size, may increase the number of dwelling units needed.

2.6 Population Issues

The Rural Municipality of Russell has been continuing to decline in farming population. This does not indicate farming viability is on the decline, but rather the rural region is attractive to non-farm residents who enjoy the rural lifestyle. Population comparison between 1976 and 1981 indicates the number of males 25 - 34 is on the increase, an unusual trend across rural Manitoba. This factor suggests that farming viability will not decline in the near future.

The incorporated centres of Russell and Binscarth are expected to continue a growth in population, likely to be spread fairly evenly over all age groupings. A trend to childbirth is evident in both the rural and urban region. This has not been the past trend and may be a freak occurence, but will result in the repopulation of schools and increased use of recreational facilities. Decreasing female population in Russell within the 5 to 19 age grouping will result in a declining childbirth rate for probably 14 years.

Two population projections were done based on past population change. Assuming the highest estimate is representative of the increase, a need for about 8 dwelling units per year to 1996 will be necessary. This calculation assumes 24 people per year increase, living 3 to each dwelling.

The most significant factor which could affect the population of the district is the construction of the potash mine. When this happens, population estimates will have to be recalculated. A mega-project such as this will attract singles as well as married couples. The housing stock will have to be able to expand to accommodate the influx.

Chapter III

DISTRICT ECONOMIC BASE

CHAPTER III

III. DISTRICT ECONOMIC BASE

3.1 Introduction

In this chapter the economic characteristics of the community are examined. An evaluation and cataloguing of the business and economic activity is vitally important in determining the future of the planning district. Significant economic ventures leading to employment act as a magnet in attracting and maintaining a population, with attendant spin-off effects to other sectors, such as housing and retail trade.

This chapter is not intended to be a detailed economic study but rather an insight into the economic structure of the rural municipality as well as the incorporated centres of Binscarth and Russell. Factors such as employment source and income levels serve as indicators of the economic climate of the region.

Due to a divergent economic base, the rural area will be examined separate from the urban area. We begin with a discussion of the rural economy.

3.2 Rural Economic Base

As mentioned previously, the Rural Municipality of Russell is an agriculturally based community. The capacity for mixed farming, with its associated benefits, provide an attraction. A large quantity of prime soil also will aid in strengthening the agricultural economy. Real estate values (for farming) increase as the soil capability for agriculture increases, the reasoning being the productive value of the soil. Across the prairie provinces, Class 2 soil yields 85 percent of the yields associated with Class 1 soil, Class 3 soil, 70 percent, and Class 4, 50 percent. The Newdale soil in the Russell-Binscarth area is considered among the most productive in the province and consequently is valued among the

highest in the province.

From this information it is not surprising that agricultural activity is strong in the rural area and continuing to strengthen. Table 3-1 indicates farm land use in 1976 and 1981.

Table 3-1 Rural Municipality of Russell
Farm Land Use--1976 and 1981.

Land Use	Census Farm Acres			
	1976		1981	
Improved Land				
- under crop	53,029		62,087	
- pasture	3,748		5,297	
- summerfallow	25,351		18,231	
- other	2,376		1,673	
subtotal		84,504		87,288
Unimproved Land				
- woodland	3,580		1,843	
- other	40,044		35,696	
subtotal		43,424		37,359
TOTAL		128,128		124,827

Source: Statistics Canada

Data from this table indicates that farm land use is increasing but that total census farm acreage is decreasing. Gains have been noted in the quantity of pasture and the amount of land under crop. The data also indicates the amount of unimproved land has been decreasing, indicating increase land clearing for agricultural use. The conclusions from this data suggest agricultural activity serves a vital role in the community.

A further indicator of the vitality of the agricultural industry is the increase in farm number and a relative stability in farm size. From Chapter II, the net population decrease in farm population was mentioned (from 518 in 1976 to 454 in 1981). Data from Table 3-2 indicates that a resultant drop in farm size did not occur. It can be deduced from Table 3-2 that is some cases farmers are increasing their property size through consolidation, while in other cases, farm splits are occuring. It doesn't appear that land is being taken out of production.

Table 3-2 Rural Municipality of Russell
Number of Farms and Farm Sizes

Acreage	Number of Farms	
	1976	1981
0 - 9	1	1
10 - 69	3	7
70 - 239	14	15
240 - 399	23	30
400 - 559	20	18
560 - 759	34	28
760 - 1,119	42	40
1,120 - 1,599	15	17
1,600 - 2,239	11	11
2,240 - 2,879	3	-
over 2,880	1	2
TOTAL	167	169

Source: Statistics Canada

Since the data is four years old, caution should be taken in interpreting any trends from the data presented. Evidently, 1978 was a boom year for crop production. Increasing mortgage costs, fertilizers and fuel costs, complemented

by low produce prices, have resulted in an increasing hardship for farmers. It will come as no surprise if the positive trends noted between 1976 and 1981 in the municipality, exhibit a reduced vitality by the next census period in 1986.

Agriculture is the largest employer in the rural municipality but secondary and tertiary industries play an important role in the economic base of the community. Table 3-3 lists employment by industry division for 1971 and 1981.

Table 3-3 Employment by Industry Division
Rural Municipality of Russell

Industries	1971 Number	1971 %	1981 Number	1981 %
Primary	235	71.5	175	50.0
Manufacturing	15	4.5	-	-
Construction	10	3.0	50	14.3
Transport, Communication	20	6.0	15	4.3
Trade	15	4.5	15	4.3
Finance, Insurance & Real Estate	5	1.5	-	-
Community, Business & Personal Services	20	6.0	95	27.1
Public Administration & Defence	10	3.0	-	-
TOTAL	330		350	

Source: Statistics Canada

The land use field trip of July, 1985 revealed a diversity of business activity, mostly located in the fringe of the Town of Russell. Businesses consisted of a ready-mix concrete plant, a service station, an automotive dealership, an auto body shop, a drive-in movie theatre, a repair shop and two aviation service companies. The agricultural sector is serviced by two implement dealers, two fer-

tilizer dealers, and a welding shop. A diversity of economic activity as indicated by Table 3-3 is suggestive of the service centre function of the planning district. This is only a recent event (1981), as it was not prevalent in 1971. The shift from primary industry is noted in the increase of employment in the construction sector. The processing plant at Harrowby may have been partially responsible for this increase.

3.3 Urban Economic Base

An interdependence exists in rural areas between the urban goods and service centre and the agricultural hinterland. Businesses located in Russell and Binscarth provide the rural municipality with goods and services, in turn, the rural municipality's needs provide employment in the urban centres. The Russell-Binscarth Planning District also services more than the immediate area through specialized businesses and attracts the travelling public through recreational facilities, food services and accommodation. Highway 16, the Yellowhead route, is a major east-west transportation corridor. To gauge the economic significance of Russell and Binscarth an inventory of goods, services and employment sources will be discussed.

a) Labour Force

Table 3-4 lists employment by industry division for the Town of Russell, 1971 and 1981. Data for Binscarth will be presented later. As to be expected, the highest employment sectors lie in the community, business and personal service industries. This is consistent with the role the urban area plays. Also to be expected is the high proportion of the workforce engaged in trade activities. While primary occupations were prevalent in the rural municipality, they are less prominent in the urban area. Likely the majority of the individuals employed in primary industries

are engaged in agriculture with the minority engaged in potash mining in Saskatchewan. In some cases farmers choose to live within the incorporated area yet carry out their activity in the rural municipality. This incidence is of insufficient magnitude to affect long-term planning implications.

Table 3-4 Employment By Industry Division
Town of Russell

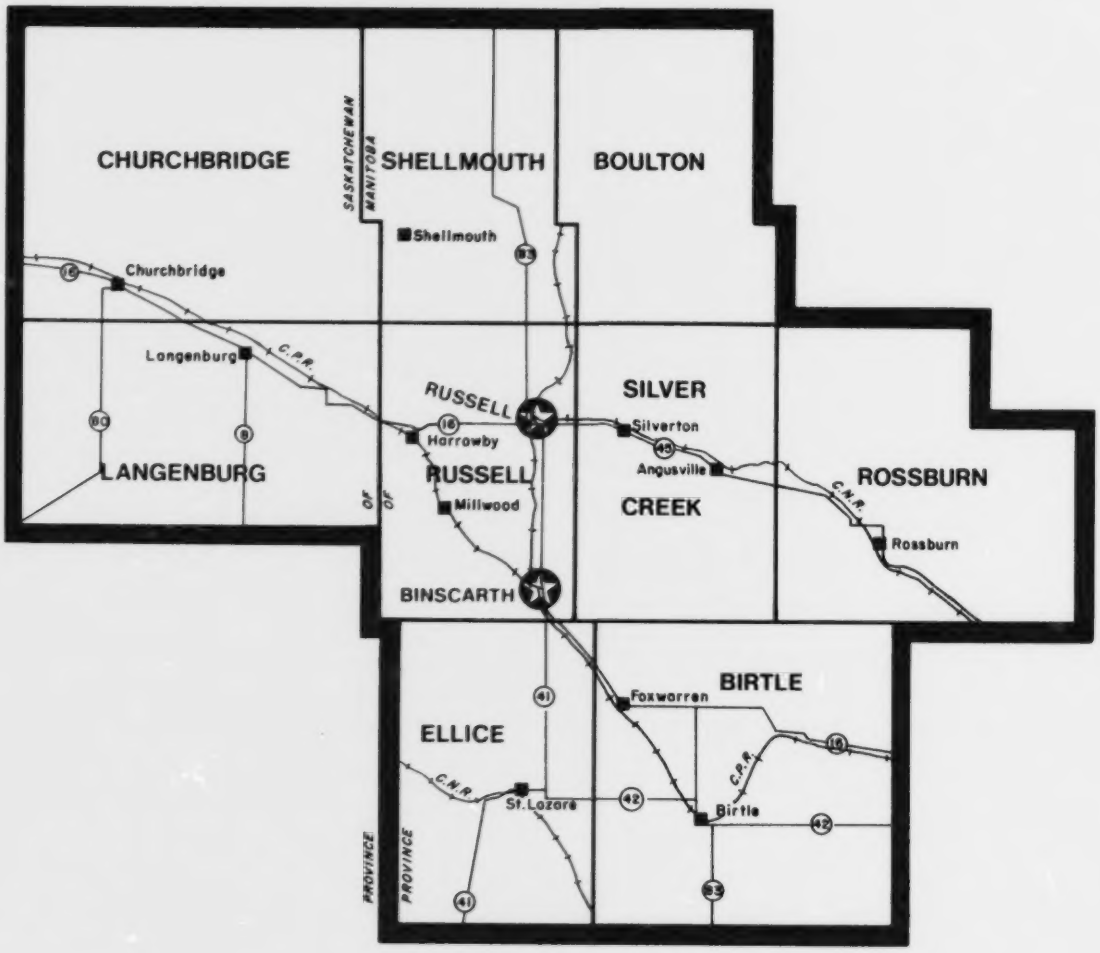
	1971		1981	
	Number	%	Number	%
Primary Industries	65	11.8	80	11.3
Manufacturing Industries	20	3.6	40	5.6
Construction	35	6.4	75	10.6
Transport, Communications & Other Utilities	65	11.8	40	5.6
Trade	115	20.9	180	25.4
Finance, Insurance & Real Estate	15	2.7	5	0.7
Community, Business & Personal Service	100	36.4	255	35.9
Public Administration & Defence	35	6.4	35	6.4
TOTAL	550		710	

Source: Statistics Canada

3.4 Economic Role of Russell

a) Trade Area

Due to a variety of goods and services, the Town of Russell attracts a population from a fairly large area. Russell's trade area consists of neighbouring rural municipalities and small towns in both Saskatchewan and Manitoba. The capture area for trade is illustrated in Map 2. In 1980 estimated trade area popula-



MAP 2

TRADE AREA
TOWN OF RUSSELL and
VILLAGE OF BINSCARTH

0 3 6 9 12
Scale in Miles
N

LEGEND Trade Area Boundary

RUSSELL-BINSCARTH PLANNING DISTRICT

Manitoba Municipal Affairs
Municipal Planning

tion was 15,424[1] and has decreased to approximately 11,537 at present[2]. Based on Russell's population of 10 percent of the trade area, we can deduce the Town of Russell serves as a sub-regional centre.

b) Goods and Services

b) (1) Agricultural Sector

The Town of Russell services the agricultural industry. Services include 3 bulk oil dealers, 2 grain elevators, 1 tire shop, 2 hatcheries, 1 fertilizer dealer, 1 motor vehicle dealer and 1 welding shop. Two implement and fertilizer dealers are located outside of town on the rural fringe. Financial institutions, general stores and other goods and services are available to serve the agricultural industry. It is doubtful that agri-business activity will diminish due to a vital regional agricultural history. Agriculture is the backbone of the economy in the Prairie Provinces.

b) (2) Retail - Wholesale Sector

The Town of Russell contains several specialty shops which attract clientele from a large area. A variety of businesses are located in Russell, with some goods and services being duplicated. The growing population necessitated an increasing amount of retail and service facilities. Retail sales have climbed from $1.8 million using 1966 census data, to $11,961,900 in the 1985 Manitoba Community Reports.

Cyclical patterns of demand for goods is dependent upon the regional economy. Decline in farm income in rural Manitoba can lead to a decline in the retail-

[1] R.S.M. and A Ltd., Retail/Commercial Market Development Assessment for the Town of Russell, n.d.

[2] Manitoba Community Reports, 1985

wholesale trade within the neighbouring supply community. This is precisely what has happened to Russell in the most recent years. Discussions with the Chamber of Commerce indicate that inquiries are being made about the establishment of new businesses, but the inquiries are not being followed with a commitment. It was reported that 5 businesses have closed in the past year[3], probably attributed to competition and a lowered demand for goods. Over the past five years, one automotive dealership as well as one lumber yard closed. Russell has two lumber yards at present but demand had indicated a need for more. These recent developments indicate Russell had seen greater economic vitality in the past but this is also true of most of the nation. Lowered interest rates coupled with rising crop prices could again increase retail activity in Russell.

b) (3) Personal and Professional Services

The number of service outlets had increased from 11 in the 1966 census to 20 in the 1971 census. The precise amount for 1985 is not known. Increases have been noted in the hospitality sector, with the construction of the Russell Inn in 1981 adding 50 rooms, for a total of 91 hotel and motel rooms in Russell, an increase of 31 over 1976.

Little change has been noted in professional services.

[3] Personal Interview, Manager of the Russell Chamber of Commerce, 26 July 1985.

Comparative numbers for 1976 and 1985 are listed below.

Town of Russell - Professional Group

	1976	1981
Accountants	1	1 & (1 parttime)
Chiropractors	1	-
Dentists	1	1
Lawyers	3	2
Medical Doctors	3	3
Optometrists	1	1
Veterinarians	1	1

Source: Manitoba Community Reports

The availability of professional services was complete by 1976 and has necessitated little change for 1985. A stable population increase should not necessitate any drastic change in professional services in the near future.

A complete listing of business and professional services available in Russell in 1985 follows.

As mentioned earlier, Russell has a variety of businesses which attract local and district population. Specialized businesses help to retain Russell as a subregional market centre. Some of these businesses may not have a competitor for many miles. According to a survey in 1979[4], out of 83 goods and services businesses, those which draw a high population include: bakery, lumber/building supplies, florist, farm machinery service, veterinary supplies and aerial agriservices. Other businesses, serving primarily a service function also attract

[4] Manitoba Department of Economic Development and Tourism, Russell and Area Business and Community Survey, August 1980.

Table 3-5

Business and Professional Services
Town of Russell

Apparel and Accessories Group	
Family Clothing	4
Jewelry Store	1
Shoe Store	1
Ladies Wear	1
Men's Wear	1
Automotive Group	
Tire Shop	1
Automotive Parts & Accessories	2
Body Repair Shops	1
Bulk Oil Dealers	3
Car Wash	1
Motor Vehicles Dealers	1
Service Stations	3
Building and Hardware Group	
Bricklayer	1
Building Contractors	
Cabinet Shop	1
Eavestroughing	1
Hardware	3
Lumber Yards	2
General Merchandise Group	
Catalogue Sales Office	1
General Stores	5

Food and Beverage Group	
Bakeries	1
Eating Places	6
Eating Places with Beverage	2
Grocery Stores	2
Ice Cream Parlour	1
Liquor Commission	1
Furniture, Applicances and Home Accessories Group	
Carpets and Draperies	1
Electrical Appliances	
Furniture	1
T.V. and Radio	2
Professional Group	
Accountant	1 & (1 parttime)
Dentist	1
Lawyer	2
Medical Doctors	3
Optometrists	1
Veterinarians	1
Financial Group	
Banks	2
Credit Union	1

Other Groups

Barber Shops	2
Beauty Parlours	3
Billiard Parlours	1
Carpet Cleaner	1
Drug Stores	2
Dry Cleaners	1
Electrical Contractors	2
Fertilizers	1
Florists	1
Funeral Services	1
Gift Shop	1
Grain Elevators	2
Hatcheries	2
Insurance & Real Estate	3
Laundries	1
Painters & Decorators	1
Photographers	1
Plumbing & Heating	2
Printers	1
Road Contractors	1
Shoe Repairs	1
Sporting Goods	1
Theatres	1
Travel Agent	1
Trucking	1
Welding	2
Meat Packer	1

Source: Land Use Study, 1985; Municipal Assessment

population from the trade area. These include most professions, but in particular optometric and dental, dry cleaning, movie theatre, funeral services and carpet cleaning.

c) Miscellaneous

In addition to the aforementioned goods and services, the residents of Russell and environs enjoy many of the community facilities available in the city. The public library contains approximately 18,560 volumes; formal educational needs are provided by a nursery school and a public school (kindergarten to Grade 12). Health services are maintained by a clinic, a public health unit, an ambulance service, a personal care home and a 40 bed hospital. Police protection is provided by 9 R.C.M.P. officers and 2 town police officers; the fire department enlists 15 volunteers, have 2 firetrucks and 1 rescue vehicle.

Two parks with playground facilities, tennis courts, 4 baseball diamonds, a football field, a skating/curling rink and a seniors drop in centre are located within town limits. The Town of Russell provides free camping for the travelling public. Russell Golf and Country Club is located 3 miles east of town. Larger scale recreational facilities are located at Assessippi Provincial Park, a short distance from Russell.

Russell has 7 churches of various denominations, 4 Protestant, 2 Catholic and 1 Eastern Orthodox. Regarding rental accommodation, Russell has 3 apartment buildings with a total of 12 suites, and 2 senior citizens homes, containing 52 units. Transportation needs are serviced by rail (CNR and CPR), highway bus, and freight carriers. Russell Municipal Airport provides fuel and charter service from its

3,000 foot, lit, asphalt runway.

3.5 Economic Role of Binscarth

The Village of Binscarth is located within the trade area of Russell, thus, some goods and services for the residents are obtained in Russell. It would not be expected that specialty businesses would locate in Binscarth if a similar business is existing in Russell.

a) Employment Sources

Binscarth's working population represents a diversity among many industry divisions. Employment by industrial divisions for 1971 and 1981 are listed in Table 3-6.

Table 3-6 Employment By Industrial Divisions Village of Binscarth

	1971 Number	%	1981 Number	%
Primary Industries	30	28.6	50	25.0
Manufacturing Industris	5	4.8	-	-
Construction	15	14.3	15	7.5
Transport, Communications & Other Utilities	10	9.5	20	10.0
Trade	20	19.0	40	20.0
Finance, Insurance & Real Estate	5	4.8	5	2.5
Community, Business & Personal Services	10	19.0	60	30.0
Public Administration & Defence	-	-	10	5.0
TOTAL	105		200	

Employment sources in Binscarth follow a similar trend of that of Russell. The highest employment sources are community, business, personal service occupations, primary industries and trade. A comparison of employment sources between 1971 and 1981 indicates a decreasing percentage of construction workers, with gains in business, community and personal services. Binscarth serves the role of a "resident" community - - sources of employment are often outside the village physical boundaries.

b) Goods and Services

Binscarth has the basic goods and services, but is lacking in professional services, such as a medical clinic. This is to be expected with Russell closeby. A listing of the available business services is shown on Table 3-7.

c) Miscellaneous

Binscarth contains a number of community facilities. Recreational services are provided by a golf club within town limits, a ball diamond and a recreation centre. Close by on Highway 16 is a campground and a swimming pool, providing local recreation as well as a tourist attraction. Community services exist in the form of an activity centre, a seniors drop in centre and a community club. Several churches of various faiths adorn the community. Educational needs are serviced by the Binscarth Consolidated School. Binscarth also contains a regional library. Protection services are provided by the local fire department and the R.C.M.P. in Russell.

Table 3-7

Business Services
Village of Binscarth

Apparel and Accessories Group	
Fabric Store	1
Automotive Group	
Body Repair Shop	1
Service Stations	2
Recreational Vehicle Dealer	1
Building and Hardware Group	
Drywall Contractor	1
Hardware Store	1
General Merchandice Group	
General Stores	3
Food and Beverage Group	
Liquor Commission	1
Eating Places	1
Eating Places with Beverages	1
Financial Group	
Bank	1
Other Groups	
Beauty Parlour	1
Farm Equipment	1
Grain Elevator	1
Bicycle Repair	1
Insurance	1
Refrigeration and Air Conditioning	1
Plumbing & Heating	1

3.6 Personal Income

Personal income levels are an important indicator of the well being of the community. A higher income level would indicate the ability to afford higher quality or an increased quantity, of personal amenities. Newer housing is a possibility in this case. If personal income is directed at housing, higher income levels equal the affordability of higher cost homes. The tax assessment for the community increases providing increased revenue for the municipality. A better quality of life is to be expected under these circumstances. The Russell-Binscarth area has a fairly high income level. Data for Russell, Binscarth, Minnedosa, Roblin and Dauphin for 1981 to 1983 is presented in Table 3-8. Income data was obtained from tax returns from Revenue Canada Taxation. These figures are considered to be reliable and accurate but indicate income levels for the area larger than the urban centre indicated. For example, data for Russell and Binscarth includes the rural municipality. This deduction is made by examining the number of filers. Similarly, data for Roblin does include at least part of the rural municipality. Rural areas mostly have no direct postal delivery — post office boxes are utilized. Revenue Canada utilizes postal address for categorizing data, hence caution is necessary in making comparisons in rural areas.

Table 3-8 Individual Personal Income

Post Office	1981		1982		1983	
	# of Filers	Avg. Income	# of Filers	Avg. Income	# of Filers	Avg. Income
Russell	1,972	10,771	1,997	12,129	2,020	11,582
Binscarth	544	10,929	531	11,446	520	11,027
Minnedosa	2,741	11,945	2,780	12,633	2,756	12,619
Roblin	2,358	9,033	2,443	9,809	2,452	9,615
Dauphin	7,474	11,611	7,506	12,930	7,494	13,300

Source: Revenue Canada

These figures indicate that all centres except Dauphin exhibited increasing income up until 1982, with a minor drop in 1983. Dauphin increased steadily all 3 years. Minnedosa and Dauphin have higher income levels than other communities because of the presence of industrial activity. The data does indicate that the Russell-Binscarth district does have a higher income level than the Roblin area. This comparison is the most representative of all because both Russell and Roblin are agriculturally based communities, of a comparable size, and located fairly close to each other. At the peak year, in the above table, of 1982, post office box holders in Russell earned almost 24 percent more income than their counterparts in Roblin.

3.7 Labour Force Participation

The unemployment rates for the planning district are unavailable in the most recent census. In order to determine the level of employment, participation in the labour force is listed in Table 3-9.

Table 3-9 Labour Force Participation

	Males (%)	Females (%)	Average (%)
Town of Russell	71.3	43.4	57.4
Village of Binscarth	61.1	40.9	51.0
R. M. of Russell	83.3	56.4	69.9
Town of Roblin	73.0	36.6	54.8
R. M. of Shell River	85.6	48.7	67.2
Manitoba	77.6	52.3	65.0

Source: Statistics Canada

The data indicates a similarity between the urban areas of Russell, Binscarth and

Roblin. A similarity is also noted among the R. M. of Russell and the R. M. of Shell River. Comparison of the planning district (59.4 percent) with that of the province (65.0 percent) indicates a slight decrease within the district. It can be concluded that the planning district roughly represents the regional area as well as the province in participation in the labour force.

3.8 Economic Base Forecast

It is to be expected that some hardship in the agricultural industry will continue. Grain prices are unstable and low prices for beef currently exist. Oilseed crops (canola) are being purchased directly by CSP Foods in Harrowby, at present, and if world demand does not decrease this will continue to be an income source for the farmer. Inflated land prices coupled with low produce prices have discouraged young people from entering farming activities. Other conditions such as climate, soil degradation or the ravages of insect infestation can also reduce agricultural viability. New technology may assist in farming activity. For example, a recent agricultural endeavour to this area has been PMU (pregnant mare urine) operations. This activity, leading to the production of pharmaceuticals, can realize large income but requires skillful management. An historical mixed farming activity in the area has proven beneficial by a divergent income base. Many people have held on to agricultural activity because, rather than strictly a vocation, it is also a way of life.

Resource extraction holds promise for the planning district. Large quantities of high grade potash deposits have been located within the district. It is of better quality and closer to the surface than the mines of Saskatchewan. Employment opportunities will be generated in the construction and operation of the mine.

The Town of Russell will continue to serve as a sub-regional goods and services trade area. Binscarth will likely continue to be a "resident" community, with the employment source being located outside town limits. Russell has lost some businesses in the past few years, and this may continue until the national economic outlook improves. The effect of the business lost has been minimal as those businesses which did cease operations had competitors providing similar goods within town limits.

The Province of Manitoba has recently reported that tourism is increasing. This may be an indicator of an improved economy. Due to the proximity of major tourist attractions such as Assessippi Provincial Park and Riding Mountain National Park and the district location on Highway 16, tourism activity may continue to grow. The spinoff effects of this relate to increased retail spending on accommodation, food, fuel and general shopping.

3.9 Concerns Identified

The Russell-Binscarth district remains a vital economic unit. A good quality of life is maintained by soil productivity, a divergence of employment sources, and the quantity of goods and services available. However, several suggestions can be made to assist in an improved outlook in the future.

1. The importance of the agricultural economy cannot be overemphasized. It is the base of the economy and supports local business. The preservation and enhancement of family farming should be encouraged.

2. Russell Rural Municipality has been catching the majority of the industrial

activity within the district. This is not necessarily a negative feature, as the benefits accrue to the district citizenry. However, increased tax revenues from industrial enterprises could improve for the residential communities.

3. The Town of Russell has lost several businesses in the past few years. This may not be a concern now, but if it continues could have some adverse effects on the town. Clientele is attracted to Russell from a distance because of specialized businesses and services. Loss of business could reduce Russell's trade area. An apparent lack of parking and a lengthy commercial strip does not enable one-stop shopping.

4. Russell and Binscarth are located on Highway 16, a major east-west transportation route. Little encouragement is given to entice traffic off this highway and into the business district. Highway commercial facilities do a relatively steady business, but motorists are not 'captured' by local merchants. Increased signage may alleviate this.

Chapter IV

LAND USE

CHAPTER IV

IV. LAND USE

4.1 Introduction

In order to construct a future land use plan, it is necessary to examine existing land uses. Besides forming the basis of future land use planning, current land use analysis indicates any existing or potential conflicts.

This land use chapter is divided into two sections, the first dealing with the Rural Municipality of Russell. Topics to be discussed include land tenure, farm/non-farm land uses with emphasis on rural or country residential subdivisions. The impact of fringe development surrounding the Town of Russell and the Village of Binscarth is also discussed in this section. Urban land use concerning the Town of Russell and the Village of Binscarth is contained within the second section of this chapter. Land use types, building permit activity and subdivision activity form the basis of the section. To conclude the review of each municipal unit, a discussion of the concerns and issues is presented.

4.2 Rural Land Use

As to be expected from information presented thus far, the rural municipality is essentially an agricultural community. Land use is illustrated on Map 3. Besides agricultural holdings, the land use map indicates taxable dwellings, commercial, industrial, as well as other uses. A taxable dwelling often indicates non-farm development. It may be a rural residential site where the prime source of income is obtained off the property, or a family split where an additional dwelling is constructed on the property to house the retiring farmer. Major features outside of farms include commercial and industrial activities on the fringe of Russell and the CSP Food rapeseed crushing plant at Harrowby.

4.2 (a) Land Ownership

The majority of the 137,211 acres in the R. M. of Russell is held under private title. The balance of the land base is owned by the R. M. consisting of vacant property, municipal sewage lagoons, waste disposal grounds and gravel pits. A final landowner is the Crown. Crown Lands, exclusive of provincial roads and highways in 1985, occupy 2,443 acres or 1.8 percent of the district land base. This Crown Land is utilized mostly for parks, agricultural use, or water bodies. The implications of the quantity of Crown Land can affect long range planning. This is because Crown Land is exempt from the Planning Act, under the jurisdiction of the Crown Lands Act and therefore not affected by the policies of the development plan. However, private citizens may use agricultural lands within the District, subject to the conditions of a lease or permit. In the event that Crown land is sold, it is then subject to regulations under the Planning Act. Present land use of Crown Land helps maintain the agricultural land base, and does provide recreational space (eg. Wayside Park near Binscarth is a Crown Lease). Due to a low quantity of Crown Land, little effect, other than that just mentioned, will be apparent.

4.2 (b) Subdivision and Building Activity

Subdivision activity has been light within the R. M. of Russell since 1976. The quantity and proposed use is listed in Table 4-1.

The majority of the subdivisions are for proposed residential usage. It is expected that rural residences will increase in number as the non-farm population increases. The nature of rural residential subdivision will be discussed later.

Table 4-1 Subdivision Activity

Year	No. of Subdivisions	Proposed Use		Agricultural /Other
		Residential	Commercial or Industrial	
1976	3	3	-	
1977	6	4	1	1
1978	5	3	2	-
1979	2	1	-	1
1980	6	3	2	1
1981	8	5	3	-
1982	1	-	-	1
1983	4	3	-	1
1984	2	1	-	1
TOTAL	37	23	8	6

Taken in total, Table 4-1, also indicates that an average of 4 subdivisions per year have been created in the nine year time frame. This table also indicates that commercial/industrial applications have been light as have agricultural applications. They account for, respectively, 22% and 16% of the total number of applications.

These statistics indicate little development pressure in Russell municipality, even with the 4 rejected or withdrawn applications in the 9 years of date. The location or concentration of rural development in many cases necessitates planning action. The nature of farm fragmentation is the focus of the next section.

4.2 (c) Farm Fragmentation

Farm fragmentation is an increasing problem in rural areas. The improvement of roads, availability of school bussing, low taxes and land prices, lack of regu-

lations, and absence of crime are often cited by former urbanites as reasons for rural relocation. Farm fragmentation on the R. M. of Russell is illustrated on Map 4. It should be noted that fragmentation of farms does not necessarily suggest rural residential dwellings. Often physical barriers such as roads, railways or rivers bisect a farm parcel. Small land parcels can lend themselves to agricultural activity in the form of intensive feedlot operations. In other cases, small farm parcels may lend themselves to rural residential uses.

The nature of farm fragmentation in the R. M. of Russell is illustrated on Map 4. This map lists the number of registered land titles per quarter section. Where no number is indicated per quarter section, this signifies one owner of the complete quarter section. In some cases, several titles (owners) are listed; uses can be many-fold and may or may not contain a building. Titles can be deeded to a municipal corporation (R. M., Village, Town), the Queen, a utility (such as the gas company) or a private individual. If the land contained an occupied building, this information would be shown on the land use map (Map 3). Knowing the size and the registered owner of the property (public or private) as well as existing uses can determine if any development trend may be imminent. The beginnings of a trend to rural non-farm residential uses in an agriculturally based community can cause hardship for the farmer, the rural resident, and the municipality. A hardship can be directed at the farmer in the form of objection to crop spraying or children and dogs playing in the fields necessitating higher fence costs. The rural resident may complain about odours, noise associated with the dawn to dusk activity and so on. Finally, the rural municipality is pressured to provide servicing, garbage pickup and other basic services and may be forced to face issues with the farming community on one side and the rural resident (who

also pays taxes) on the other. If fringe development occurs around an urban centre, negative effects can be noted for the town; future plans for expansion may be negated by fringe land use being not in accordance with the town's development plans.

The benefits of a non-farm base can positively affect the tax revenue for the municipality. Revenues from residential, commercial and industrial uses yield a much greater economic measure than agricultural taxation. It may be advantageous to support higher tax yields and also to maintain the agricultural land base. This can be achieved through controlling the location and concentration of the use. It is comprehensible to allow non-farm uses on poor quality or uneconomic farmland parcels in limited numbers but a heavy concentration of non-farm uses prohibits the land from being used for farming in perpetuity.

Farm fragmentation is not necessarily caused by multiple land owners per quarter section. For example, agricultural use of the municipality in most cases is increased alongisde the Assiniboine River when two titles are deeded. The river forms a physical barrier, dividing the land. Instead of the land being lost to agricultural production, the adjoining farmer gains title, consolidating it into a larger parcel. The nature of fragmentation in the municipality is mostly for agricultural purposes. Splits which may affect agricultural production are very minimal. Historical land development and speculation around the settlement of Harrowby and Millwood have left small remnants today in the form of a concentration of dwellings. Due to the longevity of these settlements and the lack of development interest, they should not pose a threat to farm fragmentation. It can be seen, therefore, that land or farm fragmentation has the capacity to de-

tract or enhance agricultural activities. Some splits can cause little conflict, while others can pose many problems. It is common in rural areas to note land fragmentation surrounding any major settlements. This is commonly known as fringe development.

4.2 (d) Fringe Development

Examination of the map indicating splits per quarter section (Map 4) shows that the land adjoining Russell and Binscarth has seen the majority of splits. Location of commercial/industrial and residential uses is often preferred on the pehiphery of a populated centre.

Commencing with the fringe development surrounding Russell (Map 5), we see that the NE section of 33 and the western quarters of 35 have seen the most splits per quarter section. The land use field trip of July 1985 indicated that 4 adjoining dwellings on small lots, as well as a farm implement dealer were located on the NE quarter of section 33. An examination of the tax assessment rolls (Municipal Assessment Branch, 1985) and the subdivision applications indicated three additional rural residential units were planned for the section, eventually forming 7 housing units, fronting on the municipal road allowance. The eighth title to this section is of agricultural use, while the ninth is a drainage ditch. It does appear that rural residential development is slated for this section.

Section 35, however, is of a different use. The frontage of Highway 16 leads the western edge of this section to commercial/industrial activities. Uses consist of a welding shop, redi-mix concrete (NW quarter section), an auto body shop,

automotive dealership, a gas pumping station, a concrete manufacturing plant, and a repair shop (SW quarter section). Three residential dwellings situated in proximity to Highway 16 adjoin the commercial/industrial uses. The balance of section 35 is dedicated to agricultural uses, under 5 different owners, with the exception of a dwelling in the NE quarter. In total then, 18 property titles have been deeded to section 35 - 4 to residential, 6 commercial/industrial, 1 highway right-of-way, and 7 agricultural or vacant. It can be assumed that commercial/industrial uses will form the border of section 35, and that agricultural activities will continue to form the principle use of the balance of the section.

On the other side of Highway 16 (section 34), development activity has been low. The major land use is agriculture, with various other land uses on the edges of the section. These uses consist of an implement dealter (SE quarter), a drive-in theatre and trailer court (NE quarter). The Town of Russell owns approximately 107 acres in the western quarter section of 34, used almost exclusively for the airport and associated buildings. Two aviation companies are located on this land owned by Russell. Adjoining the airport is a large implement dealership on 11 acres, and fertilizer dealer. Therefore, of the 10 registered titles in section 34, 4 are in agricultural use, 2 form the airport, and the remaining 4 are commercial use.

Throughout the rest of the fringe of Russell, the prominent land use is agriculture. The non-agricultural uses are located primarily in section 9. These uses consist of water control (4 titles), railway right-of-way (3 titles), a service station (1 title), a maintenance building (1 title) and the 7 agricultural holdings. Other exceptions to farm use are the cemetery in NE section 10, a rural

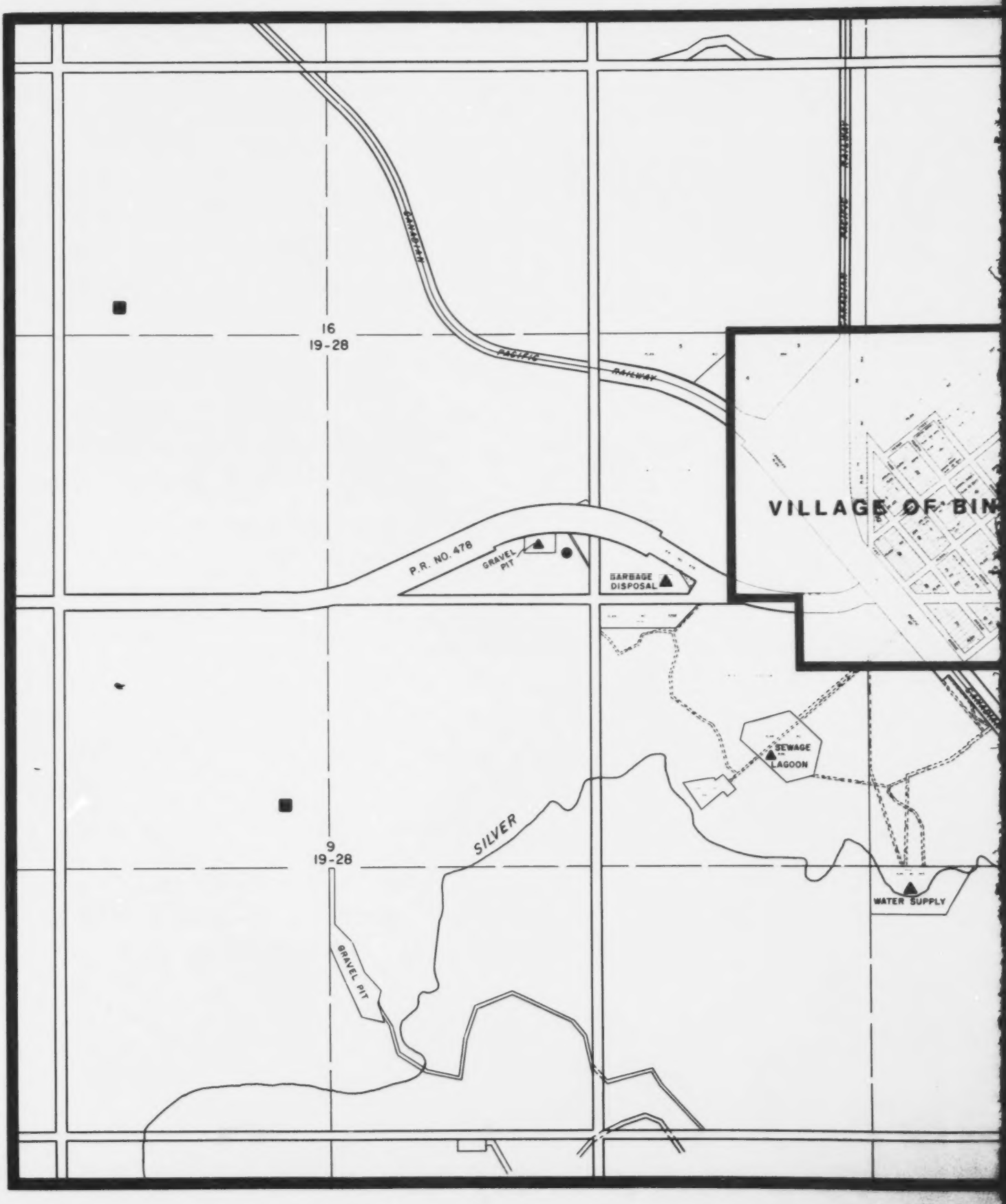
residential unit in SW section 3, and the railway and road right-of-ways which cross the municipality.

An examination of the fringe land use of Binscarth (Map 6) indicates various uses. It can be noted that the number of titles per quarter section is less numerous than the surrounding Russell and no pattern of commercial or rural residential development is evident. In some cases, physical barriers such as highways or village limits encourage the principal land user, the farmer, to consolidate land parcels enabling a more economical land use. For example, the majority of SW section 15 and SE section 16 are owned by one farmer. Similarly, the majority of NE and NW section 10 are titles to the same person, the same applies to SE and SW section 10. In summary, therefore, while Russell had indications of commercial and residential development within the fringe, the only permanent feature of Binscarth's fringe is agricultural activity. Exceptions to agricultural use are the disposal field (SE section 16), the cemetery (SE section 14), Wayside Park (SW Section 11), and three taxable (non-farm) dwellings. These dwellings are mostly located on land which cannot easily be farmed due to topography or physical barriers (roads and railways). The balance of the land surrounding Binscarth is either vacant land or associated with the highways or railways.

Again, it should be stressed that the number of registered titles does not necessarily imply development pressure. The existing land use as well as a search of ownership must be utilized.

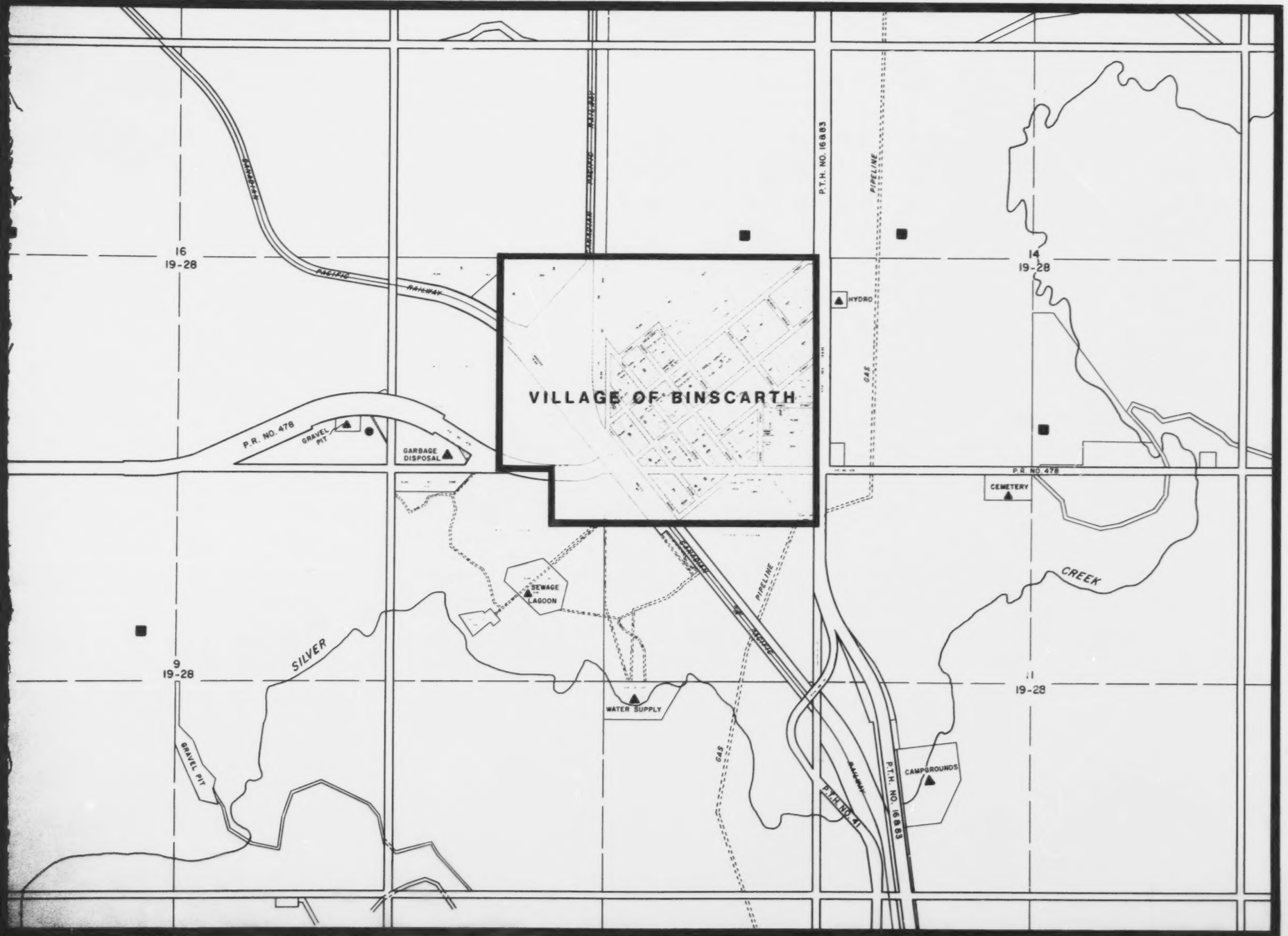
4.3 Concerns Identified

The land use study, the examination of ownership, and the type and quantity of


16
19-28
CANADIAN PACIFIC RAILWAY
VILLAGE OF BIN
P.R. NO. 478
GRAVEL PIT
GARBAGE DISPOSAL
SEWAGE LAGOON
SILVER
9
19-28
GRAVEL PIT
WATER SUPPLY

FRINGE DEVELOPMENT VILLAGE OF BINSCARTH

RUSSELL-BINSCARTH PLANNING DISTRICT



LEGEND

- ■ Resident Farm Buildings
- ● Taxable Dwelling
- ▲ Land Use As Indicated

MAP 6

1/4 1/8 0 1/4

Scale in Miles

N

Manitoba
Municipal Affairs
Municipal Planning

subdivision activity have indicated light development pressure within the R. M. of Russell. Over the past century, small settlements had evolved at Harrowby and Millwood, but have dwindled in population as the source of activity had diminished. Presently, attraction is presented for location within the fringe of a larger community. Land taxes are cheaper in rural areas yet urban amenities are available closeby. As expected, therefore, Russell has seen the most fringe activity while Binscarth has seen considerably less. Fringe activity can consist of residential, commercial, industrial, agricultural or recreational uses. For example, fringe development may affect farming in the form of a conflicting use, or may affect the town by negatively affecting land acquisition to facilitate the expansion of town limits. Fringe development is best to be planned and coordinated with both rural and urban growth policies.

Several times throughout this study, the global trend towards an increasing non-farm population in rural regions has been mentioned. The growth of part-time farming, retiring farmers wishing to remain on the acreage, and the influx of former urbanites (especially near large metropolitan centres), contribute to this recent phenomenon. Consideration should be given toward the inter-relationship between man and the agricultural resource.

Good quality agricultural land is a scarce resource in Canada. Non-farm use, therefore, is usually not the best use, affecting adversely the farmer and the rural resident. Listed below are some of the consequences of non-farm use of agricultural land:

a) Farm fragmentation: small parcels of land are uneconomical to farm unless consolidation can be facilitated.

b) Land values can be artificially inflated, assuming residential values rather than agricultural values. The farmer may view land subdivision to be more lucrative than farming activities. For those farmers who continue to pursue agricultural activities, increased land assessment leads to increased taxation; another debt to be serviced.

c) In addition to the above aspects of non-farm residences, nuisance for the farmer can be apparent. The farmer may have to contend with trespassing on his property as well as priority snowplowing and road maintenance to the non-farming clustered residents (necessitated by the above average number of residents in a small area).

d) Nuisance for the rural non-farm resident can also hinder viable agricultural operations, the most non-compatible activity being feed-lot operations. However, crop spraying, noise and dust may also prove to be offensive to the rural residential dweller.

It should be emphasized that rural residential development is not acute in the R. M. of Russell, however, indications of a future problem are present. Agricultural activities and other uses can be accommodated in rural areas with a minimum of conflict depending on their location and quantity.

4.4 Urban Land Use

This section of the land use chapter is dedicated to a discussion of the land use breakdown within the Town of Russell and the Village of Binscarth. An inventory of the quantity of general land uses and their location and trends is an important base for future planning.

4.5 Town of Russell

Russell was laid out in the traditional grid-iron pattern with the C.N.R. and C.P.R. rail-lines encompassing the majority of the town. The railway provided the catalyst for the development of an urban centre.

Viewing the Russell Land Use Map (Map 7), indicates the variety as well as the clustering of uses. The majority of the residential use is on the eastern side of town with Pelly Avenue forming the division. A small segment of residential use occurs near the southern boundary of Russell, adjoining the trailer court in the rural municipality. Commercial activity occupies most of Main Street. The west side of town between the Canadian Pacific Railway and Main Street consists of a mix of residential, recreation and commercial/industrial uses. Large areas of undeveloped land lie at the eastern and western most flanks of town. Agriculture is the principal use at the eastern border, while commercial and sparse residential areas utilize a small part of the otherwise undeveloped western boundary. The breakdown of land uses is as follows:

Table 4-2 Land Use - Town of Russell

Use	Acreage	Percentage of Total
Residential	210	27%
Commercial	40	5%
Industrial	10	1%
Parks	50	6%
Vacant	269	34%
Roads & Lanes	170	22%
Railway	39	5%

Following is a more detailed description of the land uses:

4.5 (a) Commercial

Commercial uses occupy 40 acres or 5 percent of the Town of Russell. The majority of both sides of Main Street as far north as Augusta Street are utilized for commercial purposes. Several blocks of Shell River Avenue, mostly backing onto Main Street, are also used commercially. Within this commercial area lies the majority of the businesses mentioned in Chapter III. Examples are retail stores, the bakery, two banks, Credit Union, Auto dealership, gift shop, movie theatre, hotel, lumber yard, drug store, etc. Vacant land is also available along Main Street providing a suitable location for future commercial establishments. The south town limits provide highway commercial uses, fronting on Highway 16. Uses consist of 2 motels, eating places, garages and a bulk oil station.

Noticeably absent from Main Street is much off-street parking. Parallel street parking is often hard to find in the densely packed commercial strip between Westbourne and Darcy Streets. Newer developments such as the Co-op have integrated parking into the property. In order to increase access to the existing business, as assessment of downtown parking would be worthwhile.

4.5 (b) Industrial

A smaller land use (excluding railways) within Russell is industrial. Two industrial uses are located on Highway 16 - the Gulf Bulk Oil Storage and the Highways Storage Yard. The other main industrial site is on the west side of Shell River Avenue, adjoining the C.P.R. yards. This consists of a bulk oil storage, a meat-packing house and a trucking firm. The other industrial uses within the town are

located within the right-of-way of C.P. and C.P. rail. These uses consist of United Grain Growers Elevator on C.P.R. property and Pool Elevator, Co-op Bulk Oil and Shell Bulk Oil on C.N.R. property.

In order to facilitate community growth, it may be advisable to assess the need for more industrial uses, off railway property. Industrial uses yield a greater tax revenue than residential uses and thus may contribute to increased infrastructure servicing. Vacant land is available on the west side of town separated from rural residential uses, and accessible to transportation. Closer examination will be necessary to determine the feasibility for development.

4.5 (c) Recreation

Recreational uses are scattered throughout the town with the major concentration being in the south (south of Russell Street). Of the 50 acres of land dedicated to recreational use, the majority is located within the Agricultural Society Grounds (28.98 acres). Most of the activity is passive in the form of spectator sports. Active (participation) recreational areas are located at the ball park on south Main Street and at the arena located on north Main Street. Each of these sites is spacious, but vehicular access to the arena is restricted by the absence of a parking lot. Further active and passive sites are the curling club (Westbourne at Ellice) and the Kinsmen Park and Playground (Memorial at Manitoba). The balance of the recreational sites consist of public reserves associated with the newer subdivisions to the north-east and south-central areas of town.

It is anticipated that recreational needs will grow as the town grows. Public reserves (open space) are often part of subdivision approval, providing up to

1 acre of public reserve for every 100 persons. One recreational activity that is missing is a swimming pool; discussions pertaining to this are presently before town council.

4.5 (d) Residential

The largest user of land within Russell is residential use (210 acres or 27 percent of the land base). A single family detached dwelling is the most common housing types, followed by an apartment. An apartment according to census definitions includes elderly persons housing units. Fifty-two of these units are owned by Manitoba Housing and Renewal Corporation, and are designated as public housing. Historically, a single attached unit (e.g. a suite atop a store) was the second most popular housing type but by 1976 apartments had become more prominent. Housing types for three census periods are indicated below.

Table 4-3 Housing Type

Type	Number			% Change
	1966	1976	1981	
Single detached	396	465	500	26%
Single attached	49	25	25	- 49%
Apartment	4	30	80	19%
Duplex	-	10	-	-
Mobile	21	25	*	n/a

* Mobiles are no longer included in census data.

Source: Statistics Canada

It is expected that single family dwellings will continue to increase, as well as apartments. Mobiles are located in two parks within town, one catering to

the person who chooses to purchase the property. Six lots are vacant in this subdivision. As the need to provide for single family dwellings increases, more land may have to be serviced. The results of the engineering study will suggest future locations. Meanwhile, about 96 infill lots are available on already serviced land. The locational preferences appear to be the larger lots in the southeast and northeast sections of town. Little demand is shown for the 30 foot lots surveyed in Russell's early days.

4.5 (d) (i) Building Permits

In order to determine the construction activity, it is important to examine the type of building permits and their quantity. This is portrayed in Table 4-4.

Table 4-4 Building Permit Activity

Year	New Dwelling Unit	Residential Remodel or Addition	New Commercial	Commercial Addition or Renovation	Institutional New or Renovations	Total
1976	25	21	3	3	-	52
1977	21	17	3	8	1	51
1978	14	26	-	2	-	42
1979	5	23	2	3	1	34
1980	8	15	1	2	2	28
1981	28	22	6	3	1	60
1982	6	16	1	1	1	25
1983	5	20	1	8	-	34
1984	8	10	1	2	3	24
	120	170	18	32	9	350

Over the 9 year period, the average number of permits was 39. Since 1982, building permit activity has been lighter than average. Of these approximate 39 permits

per year, about 13 were for new dwellings (houses, mobiles or apartments). The value of residential permits in dollars and in relation to other permit activities is contained in Table 4-5.

Table 4-5 Value of Building Permits

Year	Total Value ($)	Residential Value ($)	% Residential of Total Value
1976	1,135,850	795,400	70%
1977	1,889,450	635,500	34%
1978	631,900	566,000	90%
1979	561,200	228,000	44%
1980	948,350	383,000	40%
1981	2,252,700	1,342,000	60%
1982	378,800	277,000	73%
1983	831,200	255,000	31%
1984	890,272	576,000	65%

Russell had seen cyclical building activity judging by the total building permit values. The distribution of new housing values compared with total permit value also was cyclical. 1981 was the peak year, according to the permits, with such major projects as the Russell Inn and 28 new homes. However, issuance of a permit does not mean the structure will be built. Apparently, 10 of the 28 dwelling units in 1981 were not built.

Activity in residential development has been fairly steady in the past and this will likely continue into the future. Analysis of subdivision applications indicates the strong interest in residential subdivision activity.

Table 4-6 Subdivision Activity

Year	Residential	No. of Lots	Commercial/ Industrial	Other	Total
1976	7	(8)	1		8
1977	6	(37)		2	8
1978	1	(1)			1
1979	0		0	0	0
1980	1	(22)			1
1981	5	(6)			5
1982	1	(11)			1
1983	1	(22)	1		2
1984	0		0	0	0
TOTALS	22		2	2	26

It should be mentioned that although approval is given to subdivide, subdivision does not necessarily follow. Lack of finances or a decreased demand can be reason for a subdivision failing to materialize. Two of the major residential subdivisions (1980 - 22 lots, McDonald Street, between Augusta and Westbourne Street; and 1983 - 22 lots, NW of Berg Crescent) are awaiting decision. The upshot of the total residential applications is indicative of subdivision interest in most of the vacant parcels accessible by existing roads. Considering that about 96 lots were available in July, 1985 (excluding these two large subdivisions) and building permit activity for new dwellings has averaged 13 per year, Russell has approximately a 7 year inventory of residential lots. This figure assumes a similar absorption rate as in the past; higher or lower development pressure can affect the building rate.

4.5 (e) Other Uses

The remainder of the land uses are classified under 'other uses'. These include public buildings such as schools, post office, library, police and fire station, churches, health facilities and public roads. The fire department adjoins the town office, while the police station is located a block away in central Russell. The library and post office are situated on Main Street, while the schools are centrally located beside the fairgrounds. Russell District Hospital is located on spacious grounds in the southeast section of town, while the health clinic is located within the central business district.

4.6 Concerns and Issues

The Town of Russell has been well laid out, accommodating various land uses. Due to the situation of these land uses, little conflict between uses is apparent. However, several suggestions can be put forward to improve present uses, or indicate a potential land use concern.

1. Both the eastern and western most fringes of town contain large amounts of vacant land. It is anticipated that residential use will be prevalent in the eastern parcel. Present land use in the western sector is commercial, residential (with and without horse training facilities), agricultural and vacant. The availability of vacant land close to Highway 83 could accommodate a commercial or industrial use. Poor drainage on part of this land and the proximity to a major highway pre empts residential use, but would permit a compact industrial/commercial use.
2. Russell has a strong commercial/service base. Many of these goods and service establishments attract a distant population. However, the lack of off-street parking, particularly on Main Street, may be seen as a discouragement to

further growth.

3. Most of the readily accessible land suitable for residential development has pending or approved subdivision plans. After the sites are developed, the only large land mass suitable for residential use is the Agricultural Society Grounds. Eventually, new residential development will necessitate road construction and infrastructure costs.

4.7 Village of Binscarth

Binscarth is also laid out in a grid-iron pattern. The village is quite spacious with only the northeast section seeing any dense development. Highway 16 forms the eastern boundary of development, Provincial Road 478 the southern, and the Canadian Pacific Railway the western boundary. Land uses are depicted in Map 8 while the acreage of the uses is contained in Table 4-7.

4.7 (a) Commercial/Industrial

Commercial land use in Binscarth occupies little space, and is mostly centralized in the southwest of the developed area. Two commercial establishments (repair shop and gas station) are located on Highway 16. From Chapter III, you will remember that Binscarth services its population and neighbouring rural area with the basic goods; Russell serves as the principal commercial centre within the district. Unless a drastic population increase occurs, it is doubtful any expansion will be needed to the commercial strip. In the event that it does, plenty of vacant land is available, but not contiguous to the existing commercial area. Municipal Council will have to consider a location for future commercial use. Industrial use consists of the Pool Elevator, adjoining the Canadian Pacific Railway.

Table 4-7 Land Use - Village of Binscarth

Use	Acreage	Percentage of Total
Residential	98	33%
Commercial	5	2%
Industrial	43	15%
Parks & Recreation	33	11%
Vacant/Open	78	26%
Roads & Lanes	40	13%
	297 acres	

4.7 (b) Recreational

Recreation is a major land use in Binscarth. Recreational facilities are centrally located in the northern sector of the village. Facilities consist of a ball park and recreation complex, including a curling rink. One feature which is rare in most communities is a golf course within town limits. Binscarth Golf Club shares land with the Agricultural Society and is situated with the aforementioned recreational uses. The only other recreational use within Binscarth is the passive public reserve dedication, at the junction of William and James Street, and the contrally located school grounds.

The recreational space seems more than adequate for Binscarth's population. Many types of activity are available to residents, and in some respect, residents are more fortunate than their counterparts in Russell. While Russell residents are lamenting the construction of a swimming pool, an outdoor pool already exists closeby in Wayside Park (about 1 mile southeast of Binscarth).

4.7 (c) Residential

Consistent with urban settlement, residential use is the largest land user. Housing units are uniformly spread throughout the developed area of the village. Regarding housing type, the most popular unit is a single family dwelling, followed by a mobile home. An inventory of housing types for 1976 and 1981 is contained in Table 4-8.

Table 4-8 is slightly misleading. The Manitoba Housing and Renewal Corporation owns 12 units of elderly housing in 1985, (with 4 more units planning in the future); this information is not presented on the table. Also, the 1985 land use

Table 4-8 Housing Type

Type	No. of Units	
	1976	1981
Single detached	155	165
Single attached	-	10
Apartment	5	-
Duplex	5	-
Mobiles	10	*

*Mobiles are no longer included in census data.

Source: Statistics Canada

field trip revealed 19 mobiles in Binscarth; nothing was indicated in the 1981 census. The implications of these inconsistencies are that the number of housing units had increased from 1976, rather than the decline indicated from the table.

It is to be expected that single family dwellings will continue to form the most popular dwelling type due to the presence of the family. Building permit activity since 1976 indicates a steady activity in new dwelling construction and renovations to existing ones. Table 4-9 shows that over 9 years, almost 5 new dwellings (house or mobile home) were constructed per year. Residential renovations or additions (garages, storage sheds), encompassed about 10 permits per year. The prominence of residential use can thus be seen from the building permit activity.

Table 4-9 Building Permit Activity

Year	New Dwelling Unit	Residential Remodel or Addition	New Commercial /Institutional	Commercial/ Industrial Remodel	Total
1976	4	8	1		13
1977	3	6		2	11
1978	6	11		1	18
1979	10	14			24
1980	2	6		1	9
1981	7	12		1	20
1982	3	9			12
1983	2	18			20
1984	5	9	1		15
	42	93	2	5	142

As to be expected, the majority of the value of building permits was directed at new housing, residential additions or improvements. Table 4-10 indicates this.

Table 4-10 Value of Building Permits

Year	Total Value ($)	Residential Value ($)	% Residentail of Total Value
1976	368,200	368,200	100.0%
1977	99,700	87,200	84.4%
1978	151,850	151,250	99.6%
1979	258,074	258,074	100.0%
1980	202,900	110,400	54.4% *
1981	399,040	274,040	68.7% *
1982	162,500	162.500	100.0%
1983	149,600	149,600	100.0%
1984	372,900	342,900	92.0%

* Renovations to grain elevator

A further indication of the interest in housing is indicated by the type of subdivision applications. Table 4-11 gives subdivision data since 1976.

Table 4-11 Subdivision Activity

Year	Residential	No. of Lots	Commercial/ Industrial	Other	Total
1976	2			1	3
1977	1				1
1978	3				3
1979	6	(16)	1 (2 lots)		7
1980	2	(4)			2
1981	3	(8)			3
1982	1	(4)			1
1983	1				1
1984	1	(2)	1 (2 lots)		2
TOTALS	20		2	1	23

Consistent with the other tables, subdivision activity has concentrated vastly on residential uses. Not included in Table 4-11 are the 2 applications for residential purposes withdrawn by the applicant. The Municipal Council is favouring lot subdivision for all the residential applications submitted were approved. It is apparent from the examination of the subdivision applications that the majority of applications have followed with the planned development. Many of the new homes were subdivided from the previously existing large lots. As the demand for more housing units continues, more subdivision of existing serviced property may also continue.

The second most popular housing type is mobiles. Mobiles are sometimes 'starter'

dwellings for families, or provide a home for a transient population. In Binscarth, they fall into the former category. Noticeably absent is a central location for housing these units. Most communities prefer to locate these units in a designated area because they do not need large lots to maintain them. They do not detract from the community as they largely are in good condition but consideration may be warranted about siting future mobiles in a designated area of the village or imposing regulations for foundations and accessory structures.

4.7 (d) Other Uses

Public buildings are the smallest users of land within the Village. The post office, community hall, drop-in centre, and the various churches are located close to the central business district. Also centrally located is the firehall, adjoining the Village Municipal Office.

Public roads service the developed section of the village. Future residential or commercial development may necessitate construction of additional roads.

4.8 Issues and Concerns

The Village of Binscarth occupies a fair space of land, considering its population. A tremendous potential exists for development without the need to annex land from the R. M. of Russell. The activity in subdivision has been almost entirely for residential purposes and, unlike the Town of Russell, most of the interest has followed through with commitment. There has been a demonstrated need for housing. Binscarth is therefore mostly a residential community with basic commercial services. Several concerns regarding residential use can be put forward:

1. Interest in developing the golf course for residential purposes has been pro-

posed. This can be a realistic proposal as land subdivision of the existing large lots cannot go on endlessly. However, provisions for retaining a recreation site should be considered.

2. Consideration of a location for future mobile homes may be considered. A 'trailer-park' arrangement is not necessarily needed but a designated area or district might best accommodate these units. If Council chooses to intermingle mobiles with traditional houses, siting, landscaping, anchoring, foundation and ancillary building criteria may be incorporated into the development plan. Mobiles are a viable alternative to conventional housing but their viability is increased if indications of a permanency are presented.

Chapter V

FINANCIAL ANALYSIS

CHAPTER V

V. FINANCIAL ANALYSIS

5.1 Introduction

The purpose of this chapter of the report is to analyse and review key indicators relating to municipal finances. A brief review of the assessment base, current revenues, current expenditures and the general management of local revenues and expenditures between 1972 and 1983 forms the basis of this chapter. The source of this information is Statistical Information, published by Manitoba Municipal Affairs. In the event of any significant changes between 1972 and 1983, data for 1978 is also included. The most recent information available is for the year ending December 1983; 1972 data was chosen to determine any trends from the ensuing 11 years. Also examined in this chapter is the most recent 5 year capital expenditure projections.

A review of the municipal finances is important in a background study for it determines the 'affordability' of any proposed projects identified in the development plan as well as the general financial status of the community. This chapter is in two sections, the first examining the finances of the rural municipality, followed by a similar examination of the two members of the urban community.

R. M. of Russell

5.2 (a) Assessment Base

A summary of the 1972, 1978 and 1983 taxation assessment values is shown on Table 5-1. Data from this table indicates that the total tax assessment between 1972 and 1983 increased 13 percent. Assuming inflation averaged 10 percent per year, the total assessment thus declined. Noteworthing is the multi-fold increase in business tax assessment, indicative of a growth in business activity. The build-up of the commercial fringe surrounding Russell would account for the majority

of this increase.

The prime economic activity in the rural area is agricultural. This is confirmed by the fact that land assessment forms the majority of the total tax assessment (95 percent in 1972; 89 percent in 1983). A decline in the proportion of land assessment in 1983 can be attributed to construction of more buildings as well as an increase in the number of businesses. The vitality of the agricultural industry is further illustrated by the increase in tax-exempt buildings. Some of this increase is due to the re-assessment of buildings including exempt (non-taxable) farm building.

Table 5-1 Rural Municipality Assessment Base

	1972 ($,000)	1978 ($,000)	1983 ($,000)	% Change 1972 - 1983
Land Assessment	2,738	2,682	2,893	6
Building Assessment	131	205	330	152
Personal Property Assessment	3	10	17	467
Total Taxable Assessment	2,872	2,897	3,240	13
Business Assessment	15	22	49	227
Exemptions	55	101	469	753
Equalized Assessment	2,895	2,948	3,287	14

5.2 (b) Current Revenue

An examination of Table 5-2 reveals the source and value of revenue components, 1972 and 1983. The major source of revenue has been property taxes but contributions and other revenue (fines, penalties, licenses, etc.) have reduced the property taxation component from 80 percent in 1972 to 66 percent in 1983.

Table 5-2 Current Revenues

	1972 ($,000)	1983 ($,000)	% Change
Taxation			
Schools	96	262	173
Debt Charges	5	-	-
General Municipal	75	180	140
Business Tax	0.8	1	25
Total Tax Imposition	176.8	443	151
General and Private Contributions			
Payments in lieu of taxes	0.7	6	-
Unconditional	7	18	-
Conditional	2	10	-
Total	9.7	34	251
Other Revenue			
Total	34.5	193	459
Total Revenue	221	670	203
Percent Property Tax to Total Collection	80	66	

Another conclusion which can be made from this table is that while business assessment had increased considerably since 1972, the amount of tax contribution from this source had only marginally increased. This could be explained by a decrease in the mill rate attributable to business.

5.2 (c) Current Expenditures

Table 5-3 shows how revenues were spent. The highest expenditures were for education and transportation. Educational costs are traditionally the highest ex-

penditure a municipal corporation has, based on their commitment to an improving quality of life. The expenditure on road construction and maintenance (transportation) is another service to the taxpayer. Other major expenditures were for protection (R.C.M. Police services and fire department), fiscal services (transfer payments and servicing municipal debts), municipal administration and recreation.

Noticeable from table 5-3 is, that while expenses increased with time, the allocation of the financial resource remained fairly equal amongst the uses. Slight decreases were noted in local government, transportation and fiscal service expenditures while public services such as protection and recreation received an increased share of revenue.

By comparing the current expenditure increase between 1972 and 1983 (203 percent), and the increase in revenue (203 percent) over the same time frame, it can be deduced that the rural municipality is spending equal to their revenue.

5.2 (d) Capital Debt

According to the 1983 Statistical Information, of the 105 rural municipalities in Manitoba, 46 have no capital debt. The R. M. of Russell is one of these municipalities. It is obvious that expenditures have mostly been met with revenues, which explains why less than 5 percent of the 1983 current expenditures were allocated to debt services.

Lack of debt places Russell in a position of undertaking some substantial projects, if needed. Using the guideline of the Manitoba Municipal Board where

Table 5-3 Expenditures
R. M. of Russell

	1972	% of Total	1983	% of Total
General Government	22,233	10%	47,290	7%
Protection	20	-	15,811	2.3%
Transportation	68,977	31%	154,087	23%
Environmental Health	153	.07%	2,778	.4%
Public Health	3,037	1.4%	2,084	.3%
Welfare	50	.02%	2,587	.3%
Environmental Planning	-	-	-	-
Recreation	1,193	.5%	11,245	1.7%
Economic Development	2,092	.9%	3,967	.6%
Education	95,921	43%	265,954	40%
Fiscal Services	16,235	7.3%	26,054	4%
Supplies	11,431	5.2%	138,541	21%
Total	221,342	100%	670,398	100%

Percentage Change in Total Expenditures 1972 - 1983 203%

debt is not to exceed 30 percent of the local equalized assessment base, in 1983 Russell had the ability to borrow up to $986,000 (30 percent of $3,287,000).

5.2 (e) Capital Expenditure Program

The 5 year capital expenditure estimates for 1986 and 1990 are shown in Table 5-4. A continuing commitment to road maintenance is indicated by the proportion of the expenditures. Rural Russell's good affordability position is noticed by the ability to fund the expenditures through operating or reserve revenue.

The assessment base for the municipality is likely to increase in the future, as the amount of commercial/industrial and non-farm residential use increases. An increase in revenue will not likely necessitate an increase in the mill rate for some time.

5.3 Urban Centres

5.3 (a) Assessment Base

Unlike the rural municipality, both Binscarth and Russell have the majority of assessment based on buildings rather than land. Table 5-5 portrays the assessment base for both communities.

For Binscarth, the largest increase in assessment from 1972 to 1983 was in land - a 67 percent increase in assessed value since 1978. The interest in subdivision activity and building permits, from the last chapter, is borne out with these figures. For Russell, an overall growth in business activity resulted in the highest assessment increase since 1972. Table 5-5 also indicates that Russell has seen recent activity in exemptable units. Exemptable units consist of

Table 5-4

FORM No. M2346-14 – CAPITAL EXPENDITURE PROGRAM

GREGORY CARTWRIGHT

Rural Municipality of Russell
(Name of Municipality)

CAPITAL EXPENDITURE PROGRAM

PURPOSE	CAPITAL EXPENDITURE (Mark Priority 1, 2, 3, etc.)						SOURCE OF FUNDS			
	19 86	19 87	19 88	19 89	19 90	Total	Operating	Reserves	Debenture Sales	Other
Shop Equipment	1,000 00					1,000.00	1,000.00			
Road Machinery		20,000 00				20,000.00		20,000.00		
Road Machinery			100,000 00			100,000.00		100,000.00		
Shop Equipment				2,000 00		2,000.00	2,000.00			
Office Equipment					2,000.00	2,000.00	2,000.00			
	1,000.00	20,000.00	100,000.00	2,000.00	2,000.00	125,000.00	5,000.00	120,000.00		

SOURCE OF FUNDS – ANNUAL	19 86	19 87	19 88	19 89	19 90	TOTAL
OPERATING	1,000.00			2,000.00	2,000.00	5,000.00
RESERVES		20,000.00	100,000.00			120,000.00
DEBENTURE SALES						
OTHER						
	1,000.00	20,000.00	100,000.00	2,000.00	2,000.00	125,000.00

FOR MUNICIPAL USE ONLY

ADOPTED BY RESOLUTION OF COUNCIL April 15th. 19 85

M. Carlyon
Secretary Treasurer

Head of Council

FOR DEPARTMENTAL USE ONLY

Date Received

Authorized Signature

schools, churches, hospital, personal care home and government buildings. Federal and provincially owned buildings or property, pay a grant in lieu of tax.

Table 5-5 Assessment Base ($,000) Village of Binscarth

	Land	Building	Personal Property	Total Taxable	Business	Exemptions	Equalized Assessment
1972	82	448	19	549	18	78	527
1978	82	514	20	616	16	102	587
1983	137	626	23	786	20	105	672
% Change 72-83	67	40	21	43	11	35	28
					Town of Russell		
1972	741	2,314	48	3,103	105	573	3,129
1978	930	3,018	58	4,006	267	1,345	3,711
1983	987	3,654	69	4,710	312	1,560	4,816
% Change 72-83	33	58	44	52	197	172	54

5.3 (b) Current Revenues

Revenues from property taxes have increased from about 14 to 18 percent per annum. This would largely be made up of inflation. Table 5-6 and 5-6 list revenue sources for Binscarth and Russell, respectively. From these tables, several conclusions or trends may be noted:

i) government and private contributions have become increasingly important as a revenue source;

ii) property tax revenues have made up a decreasing amount of the total tax collected (82 - 93 percent in 1972; 77.7 percent in 1983);

iii) business tax in Russell is increasing, while remaining stable in Binscarth;

iv) the evidence of the importance of fines, penalties and permit revenue is noted in 1983 over 1972;

v) both centres have seen almost an equal increase in relative revenue, about 19 - 20 percent per year - exceeding the amount of inflation.

Table 5-6 Current Revenues - Binscarth

	1972 ($,000)	1983 ($,000)	% Change
Taxation			
Schools	20	52	160
Debt Charges	13	37	184
General Municipal	18	47	161
Business Tax	2	2	0
Total Tax Imposition	53	138	160
Government and Private Contributions			
Payments in lieu of taxes	0.7	7	900
Unconditional	4	14	250
Conditional	0.2	8	3,900
Total	4.9	29	492
Other Revenue			
Total	-	11	
Total Revenue	57	178	212
% property tax to total collection	93	77.6	

Table 5-7 Current Revenues - Russell

	1972 ($,000)	1983 ($,000)	% Change
Taxation			
Schools	120	391	226
Debt Charges	30	107	257
General Municipal	98	252	157
Business Tax	5	19	280
Total Tax Imposition	254	769	199
Government and Private Contributions			
Payments in lieu of taxes	3	46	1,433
Unconditional	12	50	317
Conditional	4	16	300
Total	19	112	489
Other Revenue			
Total	35	108	209
Total Revenue	308	989	221
% property tax to total collection	82.5	77.8	

5.3 (c) Current Expenditures

Indications as to the nature of municipal expenditures in Russell and Binscarth are given in Table 5-8.

It is indicated that the largest proportion of both centres expenditures is for education. Beyond this feature, all similarity disappears. Binscarth's major expenditures following education in decreasing order were: fiscal services

Table 5-8 Expenditures ($,000)

	Binscarth				Russell			
	1972	% of Total	1983	% of Total	1972	% of Total	1983	% of Total
Local Government	9	15.8	25	15.7	30	10.4	92	8.8
Protection	1	1.8	5	3.1	20	6.9	92	8.8
Transportation	6	10.6	17	10.7	46	16.0	165	15.7
Environmental Health	1	1.8	6	3.8	7	2.4	20	1.9
Public Health	2	3.5	1	.6	5	1.7	4	0.4
Welfare	1	1.8	6	3.8	2	0.7	5	0.5
Environmental Planning	-	-	-	-	10	3.5	1	0.1
Recreation	1	1.8	2	1.3	7	2.4	45	4.3
Economic Development	-	-	-	-	3	1.0	6	0.6
Education	20	35.1	55	34.6	122	42.4	415	39.5
Fiscal Services	16	28.1	42	26.4	36	12.5	201	19.1
Total	57		159		288		1,050	
Percentage Change in total expenditures 1972-1983				169				264

(debt servicing, transfer payments), local government services (administration) and transportation (street construction, lighting, maintenance, labour). Russell, however, has its second major expenditure as transportation, followed by fiscal services, then local government. When comparing the revenues with the expenditures of both urban centres, it appears that Binscarth's revenue has increased over its expenditures (212 percent increase in revenue 1972-83; 169 percent increases in expenditures). Russell, however, has seen increasing expenditures over their revenue source. Revenues increased 221 percent 1972-83, while expenses increased 264 percent. Indications of the debt load will be given in the following section.

5.3 (d) Capital Debt Position

The capital debt position for Russell and Binscarth is illustrated in Table 5-9. Binscarth has incurred debt for water and sewer services, with the debt having increased 23 percent from 1972 to 1983. Russell, the larger community, incurred debt for transportation, water and sewer, and recreation services. The debt incurred by Russell increased 210 percent from 1972 to 1983.

It is common for urban centres to incur debt as there is a constant need for expansion and maintenance of services. Generally, municipal corporations are able to borrow up to 30 percent of their equalized assessment. In 1983, 30 percent of the equalized assessment for Russell was approximately $1,445,000 while the capital debt was approximately $605,000. Russell, therefore, has a debt load of about 41.8 percent of its borrowing capacity. Binscarth had a total possible borrowing capacity of approximately $202,000, while the capital debt was about $155,000. Binscarth, therefore, had a remaining borrowing capacity of about $47,000, or has incurred debt up to about 76.7 percent of its suggested capacity.

Depending on the nature and extent of projects undertaken, both these communities should be able to afford a financial investment. It is to be expected that both Binscarth and Russell will continue to derive most of their taxes from residential buildings. Russell, however, has seen an increasing amount of tax revenue originating from business taxation. Due to a higher tax value from business taxation and a steady increase in population, Russell will likely be the community in the best position to afford major expenditures. Both communities in the past have managed their financial resources well and there is no reason that this won't continue into the future.

Table 5-9 Capital Debt Position
($,000)

	Binscarth			Russell		
	1972	1978	1983	1972	1978	1983
Administration	-	-	-	-	-	-
Protection	-	-	-	-	-	-
Transportation	-	-	-	-	40	-
Water & Sewer	126	89	155	195	412	434
Social Services	-	-	-	-	-	-
Recreation	-	-	-	-	201	171
Total Debentures	126	89	155	195	653	605
Deferred Liabilities	-	-	-	-	-	-
Total Capital Debt	126	89	155	195	653	605
30 Percent of Equalized Assessment	158		202	939		1,445
Percent debt load to borrowing capacity	79.9		76.7	20.8		41.8

5.3 (e) Capital Expenditure Program

Both Russell and Binscarth are slated to spend a considerable sum over the next 5 years, to improve the quality of life for the residents. The Town of Russell, probably realizing their income to expense imbalance, have slated the major expenditures to commence in 1988 (Table 5-10). However, if necessary, the current borrowing capability should not preclude any current project from being undertaken. Binscarth has slated modest expenditures for every year of the five (table 5-11). The increasing revenue over expenses necessitates that less than 13 percent of the necessary budget is to be raised through debenture sales.

Table 5-10

FORM No. 473-5344 — CAPITAL EXPENDITURE PROGRAM

TOWN OF RUSSELL - 1985
(Name of Municipality)

CAPITAL EXPENDITURE PROGRAM

PURPOSE	CAPITAL EXPENDITURE (Mark Priority 1, 2, 3, etc.) 1986	1987	1988	1989	1990	Total	SOURCE OF FUNDS Operating	Reserves	Debenture Sales	Other
TRANSPORTATION										
Street Paving & Curbing	Nil	Nil	300,000	Nil	Nil	300,000			300,000	
SEWER & WATER UTILITY										
Sewer & Water Extension	Nil	Nil	Nil	100,000	Nil	100,000			100,000	
	Nil	Nil	300,000	100,000	Nil	400,000			400,000	

SOURCE OF FUNDS — ANNUAL	1986	1987	1988	1989	1990	TOTAL
OPERATING						
RESERVES						
DEBENTURE SALES	Nil	Nil	300,000	100,000	Nil	400,000
OTHER						

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ADOPTED BY RESOLUTION OF COUNCIL April 2nd 1985

Head of Council

Secretary Treasurer

APPROVED BY MINISTER OF MUNICIPAL AFFAIRS — JANUARY 1981

FOR DEPARTMENTAL USE ONLY

Date Received

Authorized Signature

Table 5-11

FORM No. 478 3346 — CAPITAL EXPENDITURE PROGRAM

VILLage of Binscarth
(Name of Municipality)

CAPITAL EXPENDITURE PROGRAM

PURPOSE	CAPITAL EXPENDITURE (Mark Priority 1 2 3 etc.)						SOURCE OF FUNDS			
	19 86	19 87	19 88	19 89	19 90	Total	Operating	Reserves	Debenture Sales	Other
Streets and Repair	40,000.					40000.00	20,000.00			20,000.00 GR.
Machinery		15,000.				15000.00	15,000.00			
Streets and Repair			40,000.			40000.00	20,000.00	20,000.00		
Public Utilities				50,000.		50000.00			25,000.00	25,000.00 GR.
Streets and Repair					50,000.	50000.00	25,000.00			25,000.00 GR.
	40,000.	15,000.	40,000.	50,000.	50,000.	195000.00	80,000.00	20,000.00	25,000.00	70,000.00

SOURCE OF FUNDS — ANNUAL	19	19	19	19	19	TOTAL
OPERATING	20,000.00	15,000.00	20,000.00		25,000.00	80,000.00
RESERVES			20,000.00			20,000.00
DEBENTURE SALES				25,000.00		25,000.00
OTHER	20,000.00			25,000.00	25,000.00	70,000.00
	40,000.00	15,000.00	40,000.00	50,000.00	50,000.00	195,000.00

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ADOPTED BY RESOLUTION OF COUNCIL Dec 9 19 85

Chapter VI

SUMMARY AND CONCERNS

CHAPTER VI

VI. SUMMARY AND CONCERNS

This study has presented data relating to settlement, population composition and historical growth, the economic base, land use and municipal finances for the three municipal corporations forming the Russell-Binscarth Planning District. Planning issues or concerns which are identified from this study may well serve to assist in policy formation for the following development plan.

The Russell-Binscarth Planning District consists of three individual yet interdependent communities. The Rural Municipality of Russell enables a livelihood (directly or indirectly) for many of the residents of the adjoining urban communities. The two urban settlements in turn service the rural agricultural community. The Town of Russell supplies many of the needed goods and services, while Binscarth also serves to supply goods, but its principle role is a residential community.

This chapter presents a profile of the R. M. of Russell, the Town of Russell and the Village of Binscarth based on information presented in this study. To conclude the discussion of each member municipal corporation, identified concerns are summarized.

6.1 Rural Municipality of Russell

The R. M. of Russell contains over 200 square miles of land and is located in southwest Manitoba adjoining the Province of Saskatchewan. Past glaciations have left a deep gorge, bisecting the area, forming the Assiniboine River. Glaciations had resulted in a picturesque river valley, but more importantly, left the area with good quality agricultural land. The viability of agricultural activity has been demonstrated several times throughout this study - increased land clearing,

increased number of farms, etc. Most of the agricultural activity has been mixed farming; cattle, oilseeds, grain, with some specialty operations such as feedlots and PMU operations. The diversity of activity has minimized the effects of crop failures, insect infestation, etc.

Socio-economic data from the study indicated some interesting characteristics of the population and personal income status of the residents. Consistent with most rural areas, a declining farm population was noted - a decrease of 393 citizens from 1961 to 1981. However, the median age of all residents in 1981 was 25 - 34, with the percentage of males in this age grouping showing an increase over the previous census period, 1976. Most rural communities have been losing their young population in search of jobs or further education in the city. Regarding personal income, taxation returns for the District indicated a higher income, (up to 24 percent higher) than for individuals located in the Roblin area. The diversity of employment services (farming, mining, business and construction) aids in a higher income level.

Indications of a vibrant economy are suggested by the average relative youth of the residents and at the district personal income level.

As to be expected, the land use of the R. M. of Russell is primarily agriculture. Farm consolidation is evident. Little interest has been shown in land subdivision (about 4 percent from 1976 to 1984). The majority of subdivision has been for residential purposes, with the fringe of the Town of Russell seeing the most concentration of intended residential subdivision. Interest in farm consolidation was evident through the examination of land ownership. The beginnings of a con-

centrated rural residential (non-farm) area is emerging on land across from the airport. The only other concentration of non-farm use is the commercial/industrail strip development on Highway 16.

This summary has shown the Rural municipality residents to be capable of maintaining a good quality of life. Consistent with these thoughts is the good financial situation of the area. Statistics in 1983 revealed that the R. M.'s taxation revenue was exceeding their expenditures. Not surprisingly, no capital debt was evident in this same year. Capital expenditures indicate an ongoing program of community betterment, specifically through road maintenance. If needed, in 1983, the R. M. of Russell could have borrowed almost 1 million dollars.

Concerns

The rural municipality has agriculture as its base. Policies therefore should be directed at the enhancement of this activity. Concerns may consist of:

1. The problem of incompatibility of farm and non-farm use. Any unplanned concentration of non-farm development, specifically rural subdivisions, may affect the farmer, the non-farm resident and the municipality. Lost productivity, mutual complaints, and increase tax assessment may be harmful to the livelihood of the municipality, and the farming way of life.
2. When the proposed potash mine becomes a reality, it will affect the rural municipality. Being located within the municipality, site preparation, construction and production will alter the landscape. An increase in the non-farm population may cause pressure for more land subdivision. In short, this new venture will necessitate policies to enable intergration with the present culture of the municipality.

6.2 Town of Russell

The Town of Russell has the role of a regional service centre. This has evolved because of its physical location, the rich agricultural hinterland, and as an attractive place to live. Russell has specialty businesses and facilities which attract a population from a distance. Examples of these magnets are the bakery, the veterinarian, the agri-aviation service, and the lighted airport. Estimates suggest Russell's trade area is about 7 times the population.

Russell is the only town in the Parkland region of Manitoba to be serviced by two railways. Transportation is also assisted by two major highways. With vacant land available, commercial and industrial opportunities may be available.

Unlike the rural municipality, the population of Russell is on the increase. From 1961 to 1981 the population grew approximately 20 per annum. Like the rural municipality, the population is generally young (median age 25 - 34). Due to a cross-section of population age groupings, many community amenities are available. For the aged, facilities are available to house these residents via a personal care home and senior citizens' home. Schools and recreational facilities are available for all ages. As to be expected, the principle source of employment for the working resident is business and personal services.

Russell has evolved into a town accommodating the necessary land uses but with an apparent absence of land use conflict. The most active use in recent years has been residential. From 1976 to 1984 residential building permits made up most of the activity. Out of 350 permits issued, 120 were for new dwellings and 170 were for residential additions and renovations. Subdivision activity has

been directed mostly at residential use, encompassing 22 of the 26 applications. As a result of subdivision activity and speculative interest about 96 lots were available in July 1985. Based on a historical absorption rate of 13 lots per year, an inventory of over 7 years is available.

The municipal finances of the Town of Russell reflect the increase in business activity. Business taxation revenue increased 197 percent between 1972 and 1983. However, it does appear that past expenditures have been greater than revenues, necessitating a small capital debt. This debt does not present an affordability problem due to a high equalized assessment base. Ongoing programs of water, sewer and street maintenance will continue to enhance the lifestyle of the residents.

Concerns

The Town of Russell has evolved into a viable community and no indication of any decay is present, yet several concerns were identified from the study.

1. Russell has emerged as a regional trade centre due some what to the variety of goods and services it provides. A concentration of commercial businesses on Main Street with little provision for off-street parking can often restrict access to these businesses. An evaluation of parking is suggested.
2. Town Council should try to identify the economic objectives of the town. This would assist with the parking question and also suggest a possible use for the vacant land between the railway and Highway 83.
3. If the economic objective of Council is to increase the business activity of Russell, perhaps increased promotional signage on Highway 16 and 83 could assist local businesses.

4. In the not too distant future, the presently available vacant serviced land will become infilled with residential units. Council will have to determine the direction of further development.

6.3 Village of Binscarth

It was mentioned in the introduction to this chapter that all three memebers of the Planning District are individual yet interdependent. Rural Russell is the agricultural community, the Town of Russell is the regional trade centre, while Binscarth is primarily a residential community. Over the past 30 years, the population size in this community has been relatively stable, unlike the other two municipal corporations. Also unique is the median age being 35 to 44, rather than 25 to 34. Rather than being a retirement community, Binscarth has seen an increase in the number of small children and a retention of the younger segment of the population.

Further indications of Binscarth being a desirable place to live is indicated by the number of residents who live there but are employed elsewhere. Citizens may work in the potash mines of Saskatchewan or in a business activity in Russell yet choose to commute from Binscarth. Local employment is offered in local businesses and services providing many needs of the populace.

As to be expected, the land use is principally for residential purposes. Of the 142 building permits issued between 1976 and 1984, 42 were for new dwellings and 93 were for renovations/additions. It is therefore not surprising that in most of these years, residential permits contributed nearly 100 percent of the total value of permits. It also follows that 20 of the 23 subdivision applications,

1976 to 1984, were for residential purposes. Unlike Russell, however, these applications were mostly followed through with a commitment to build.

The most stable population growth has not necessitated any recent major expenditures of taxation revenue. It is not surprising that the capital debt between 1972 and 1983 had increased only 23 percent whereas a community like Russell had incurred a debt of 210 percent. The financial situation of Binscarth in 1983 was good considering revenues were greater than expenditures. However, a slow population growth and a reliance on residential taxation places Binscarth in a position of a low borrowing capacity ($47,000 in 1983). In spite of this, this same slow population growth should not necessitate any sudden expenditures. Interest in residential development, showing Binscarth as a good place to live, is showing no sign of abatement.

Concerns

The following are emerging concerns identified in the background study:

1. Municipal Council should consider a policy for mobile homes. Will the future siting of these units intermingle with conventional homes or are they best located in an area of the community reserved strictly for them? If they are to mix with other housing, are siting, foundation and appearance standards to be imposed?
2. Binscarth is located on a major highway, yet little signage is present to attract the passerby into the village. The traveller may benefit the local businesses.

Chapter VII

ENGINEERING REPORT

RUSSELL BINSCARTH PLANNING DISTRICT

BACKGROUND STUDY ON MUNICIPAL INFRASTRUCTURE

OCTOBER 1985

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Appendix "A" - Terms of Reference

Plans - Russell Water & Sewer Layout - (065-02-02-L3-)

Binscarth - Water & Sewer Layout - (065-02-02-L6)

Note: Other plans showing topographic elevation contours and delineating the maximum possible extent of future servicing, are available for viewing at the offices of Municipal Planning (Dauphin), The Town of Russell, the Village of Binscarth and the Consultant.

SYNPOSIS

The community infrastructure engineering study identified a number of shortcomings both to existing systems in general, and to their ability to deal with community growth in various directions. Key areas where upgrading is required include:

Town of Russell
- Water Distribution
- Upgrading to Improve Fireflows
- Sewage pumping and treatment capacity
- Localized Trunk Sewer Capacities
- Highway Access and Frontage Roads

Village of Binscarth
- Water Supply/Treatment/ Pumping Capacity
- Highway Turning Lane
- Disposal Ground Fencing

Development of specific proposed areas in each community will require additional specific upgrading projects, in terms of construction of trunk water, sewer and drainage lines.

PART I INTRODUCTION

1.01 General

The consulting firm of A. J. Poetker & Associates Ltd. has been retained by the Russell Binscarth Planning District to undertake an engineering background study of the municipal infrastructure of the Town of Russell and the Village of Binscarth.

This study includes an analysis of the ability of the infrastructure to support extension of services into potential growth areas around these communities. The purpose of the study is to provide background information for the establishment of a development plan for the district.

This report outlines the findings of the study. Detailed terms of reference are attached in an appendix to this report.

1.02 Methodology

All plans of existing works and reports on existing and proposed works were reviewed. Interviews were conducted with municipal staff, councillors and provincial officials. Inspections were undertaken of various public works comprising the municipal infrastructure. Surveys were undertaken on adjacent lands to obtain topographic data.

The information obtained was analyzed. The capacity and limitations of existing works were determined both as to the present day situation and in terms of future devel-

opments. Feasible development areas were defined and assessed in terms of ease of servicing. Alternative upgrading schemes were conceptualized, analysed and priorized.

PART II TOWN OF RUSSELL

Section 1 - WATER SUPPLY

1.01 General

For the purpose of this report, the term "water supply" covers the source of raw water, the transmission works, treatment and storage facilities, and distribution pumping.

1.02 Source Description

A new water source was developed in 1984 for the Town to replace a man made impoundment on Conjuring Creek which had been the source for the preceeding 20 years. For 10 years prior to that, the Town relied on two wells within its boundaries, but these had limited supply capabilities.

The new source is a 60 foot deep well consisting of an eight inch PVC casing and stainless steel screen. It develops a high capacity sand and gravel aquifer in the southeast quarter of Section 17-21-27 West. The aquifer flows at a very high rate, and has a static (artesian) head of 33 feet above ground. The government hydrogeologists who investigated and subsequently developed the site, projected flows of over 400 IGPM could potentially be sustained.

The water quality is relatively good, except for iron, manganese and hardness, which are high but easily treated by the Town's existing plant. One potential concern with quality is that the well screen will eventually plug up. Maintenance will be required, perhaps once

every five years. A second potential concern is that the present well has considerably less capacity (200 Igpm) than originally contemplated. The hydrogeologists explained that it was difficult to pinpoint the best location for the well, and the chosen site was found not to be the optimum. A second well has been built recently, a short distance north of the existing well, and it is hoped that the aquifer will be comprised of less "fine" material and more "coarse" at that location. The second well would be the main supply well, while the first would primarily operate in a standby role. However, no report is yet available from the MWSB with regard to the characteristics of the new well.

1.03 Raw Water Pumping

When flowing at rates less than 100 Igpm, the artesian head of the aquifer is sufficient to "drive" the water through the 5.5 mile pipeline to the town water plant, without requiring any supplemental pumping. For flows over 100 Igpm, a booster pump is required. A pumphouse building at the well site provides a 5 hp. submersible inline booster pump capable of delivering up to 265 Igpm.

The capability to deliver more to the plant would require installation of a bigger booster. The main constraint to doing this is the limited availability of hydroelectric power at the site. A more substantial hydro line would be required.

As it stands, a 265 Igpm capacity should be adequate, for an equivalent population of 3500 persons, at projected consumption rates of 60 Ig per person per day, and at a 1.5 peak day use factor (suggested by statisti-

cal data in the 1983 water supply feasibility study completed by A. J. Poetker & Associates Ltd.)

1.04 Raw Water Pipeline

The eight inch, 5.5 mile PVC pipeline constructed in 1984, will convey up to 265 Igpm with the present 5 hp booster pump in action. Again, this is adequate for a population equivalent of 3500 persons. The pipeline presently operates at static pressures up to 47 psi, and dynamic pressures of up to 29 psi, which are far below the design capabiity (125 psi) of the line. Flows of over 500 Igpm should be possible without exceeding the pressure rating of the pipeline. The corresponding population equivalent is in excess of 6000 persons.

1.05 Treatment Plant

Presently, the treatment plant can treat water at a rate of up to 90 Igpm, using the cold lime softening and filtration process. The plant was constructed 20 years ago, and has a variety of shortcomings, many of which are being rectified by construction currently under way.

The renovated plant should be able to reduce iron, manganese and hardness in the water to accepted limits suggested by the Canadian Drinking Water Standards, at sustained rates of 125 Igpm, but with higher short term rates being possible. This is comparable to an equivalent population of over 2000. (It should be noted here, that when comparing "equivalent populations" for various water flow rates in the sections of this report, the two factors are <u>not</u> directly proportional, because statistically, a higher population uses more water per capita, but peaking factors tend to increase at a lower rate.)

This represents the greatest possible rate at which this plant can operate. It is possible to increase the plant rate by treating only part of the water, and blending 125-150 Igpm of treated water with 50-75 Igpm of raw water to produce a total 200 Igpm of water with lower but still acceptable quality. This would support an equivalent population of around 3000 persons.

1.06 Storage

Presently, some 307,000 Imperial gallons of treated water storage capacity is available in Russell. The water tower holds 62,000, while the under plant clear-well holds 25,000 and a newly constructed (1984) under-ground reservoir at the plant provides an additional 220,000 Ig. It is difficult to assess precisely the relationship between population and storage require-ments, because the issue of fire protection is involved. A common design criteria is the Ontario Ministry of Environment formula, which specifies a storage of 1.25 times the sum of the required fire storage plus one quarter of the peak daily demand. The MWSB specifies a minimum fire flow of 1600 Igpm for a two hour period (192,000 Ig), for communities of this size. For a future population of 2400 consuming an average 60 Ig per person per day, and using a 1.5 peaking rate, the peak daily demand would be 216,000 Ig. By the MOE formula, such a population requires 307,500 Ig of storage. By this cri-teria then, the storage capacity is adequate for a popu-lation of 2400.

Additional storage reservoirs may be constructed north of the existing plant, on existing MWSB property. The site can easily support a reservoir of up to half a million gallons, depending on configuration.

1.07 Pumping

New domestic pumps currently being installed at the plant will each have a capacity of 330 Igpm. This is adequate for an equivalent population of over 2300 people. Provided that the tower remains in service, and is full at the start of a peak demand period, the combination of the tower and one pump will provide some 500 Igpm, adequate for an equivalent population of about 3500. It should be noted that it is assumed that only one of the two domestic pumps operates at any time; the second is assumed to play a standby role.

The new fire pump, which is an 800 Igpm gas engine driven unit, would be used in the event of serious fires. A combination of the fire pump, one electric distribution pump and the water tower, can deliver 1550 Igpm, adequate for an equivalent population of about 2400.

Increasing fire protection capability would require a larger pump than can be practically installed at the plant, and therefore, would require a new plant or, potentially a separate pumping station located adjacent to a new, larger reservoir (as per Section 1.06).

SECTION 2 - WATER DISTRIBUTION

2.01 General

For the purposes of this report, the term "water distribution" covers the piped water delivery system within the road rights-of-way in the community.

2.02 Extent of System

The distribution grid covers virtually the entire built up area of the Town. The only area not serviced is the extreme southeast, where there are a few homes and commercial establishments east of the hospital.

2.03 Water Main Pipe

Virtually the entire system is comprised of six inch cast iron pipe. The oldest lines (30 years of age) consist of "universal joint" pipe, which utilized two bolts to hold pipe joints together. These joints have proven unreliable with age, and corrosion deterioration has resulted in frequent line breaks. Middle age lines (typically 15 years old) consist of bell and spigot push on joint pipe. These joints are far superior, but the thinner pipe wall is more susceptible to corrosion, with resultant pinhole leaks and beam breaks.

Newer lines constructed in the past five years have utilized PVC pipe, which is free from corrosion problems. All new construction and replacement of existing lines will utilize this type of pipe. The standard type adopted by the Town council is the AWWA Specification C900 Class 150 type.

While most mains are six inch, there is a limited amount of four inch (on Shell River Avenue from Arsini to Darcy Streets; on Augusta Street from Shell River to Pelly Avenue; on Darcy Street; on Russell Street west of Memorial Avenue) and eight inch (on Westbourne Street from Main to the Tower). The first phase of a ten inch PVC feedermain system was constructed in 1984 from the water plant, on Darcy to Main, and south to Westbourne.

2.04 Appurtenances

All gate valves installed prior to 1984 were of the AWWA C500 type. The 1984 construction (and all future work) utilized the newer C509 resilient seat type. Most valve locations conform to accepted design standards (two per tee, three per cross).

All fire hydrants installed prior to 1968 were McAvity Fig. 9658-0 sliding gate type. Many of these obsolete hydrants have only two hose nozzles and no pumper nozzle.

Installations after 1968 utilized the modern compression type hydrant design. Most are McAvity M67S, but the Centennial Crescent area has Canada Valve Century hydrants.

Hydrant locations correspond closely to accepted MWSB design standards, where all protected properties must fall within a 250 ft radius of a hydrant. The primary areas which do not conform (and in fact have properties beyond 325 ft of a hydrant) include the area on Main between Russell and Heather Streets, the intersection of Manitoba Avenue and Alexandria Avenue, and the intersection of Assiniboine Street and Shell River Avenue. There

are areas which fall beyond 250 but within 325 ft and these are not considered serious deviations from the standard.

2.05 System Design and Capacity

The distribution grid is partially looped. Numerous streets have dead end mains which should ideally be looped back to other mains to prevent stagnation of water and improve distribution pressure (especially during fires). Areas which could benefit from looping include Main Street from Manitoba Avenue to Arsini Street to Shell River Avenue; Heather Street from Main to Memorial Avenue; and Alexandria Avenue from Manitoba Avenue to Arsini Street. A number of short dead ends near the CNR line could potentially be looped but this is probably not justifiable in terms of the costs and benefits.

No areas presently suffer from poor domestic water pressure. Firefighting capability and the capacity to extend the system are questionable in many areas, however. The distribution system was modeled and operation simulated using the computerized Hardy Cross analysis method.

MWSB design guidelines suggest a minimum fireflow of 400 Igpm for (relatively) low density residential developments in rural towns such as Russell. Medium density commercial areas are rated at 800 Igpm, and higher risk points, such as main streets with zero clearances between buildings and such major public investments as arenas, rinks, schools, hospitals, should be protected with a flow of 1600 Igpm under these guidelines. All flow criteria assume a minimum 20 psi pressure residual at the fire hydrant.

Our analysis shows that many areas in Russell are not protected to the MWSB recommended standards. The worst area is the extreme southeast. The hydrant on Mather north of the hospital will deliver a maximum 300 Igpm (200 if the water tower is disconnected in winter, as proposed by council) flow at the required 20 psi residual pressure. Ideally, the hospital requires 1600 Igpm, and at a minimum, 800 Igpm should be available

The southmost part of town (Main Street and PTH 16 area) are protected only to 400 Igpm levels, although because of the nature of the business establishments there, 800 Igpm would be more appropriate.

The solution to fireflow and pressure problems in the south half of the town is to construct a 10 inch PVC feedermain on the east side of Memorial Avenue from the eight inch feeder at Westbourne, south to PTH 16. Aside from being appropriate in terms of location in the distribution grid, the east side of Memorial provides relative ease for construction as there are no service connections or driveways (it flanks the agricultural grounds).

The 10 inch line would be interconnected to the six inch main at Mather. Any development on the agricultural grounds could incorporate a further 10 inch branch running east to Bonny Avenue. The first phase alone will ensure good pressure and flow characteristics, with up to 800 Igpm fireflows available on existing six inch branch lines within 1000 ft. of the feeder. Providing 800 Igpm at the hospital will require the second phase 10 inch line to be constructed across the agricultural grounds.

The 10 inch feedermain to PTH 16 will permit extension of full water service to all of Section 34-20-28W (the section of land immediately south of the Town) and the northwest of 35-20-28W, but more on this is to be found in following sections of this report.

Another area which is not particularly well protected is the southwest, particularly south Main Street with its commercial nature. South of Russell Street, potential fireflows on Main Street fall below the 800 Igpm level. The only block on Main Street capable of delivering the desireable 1600 Igpm for business districts, is along the existing 10 inch main (Darcy to Westbourne).

To bring south Main Street up to at least the 800 Igpm level, there could a 10 inch branch constructed from the proposed Memorial Avenue feedermain, along Heather Street, to Main.

Most of the rest of the town is residential, and a 400 Igpm fireflow is possible in most of these areas. One exception is at the intersection of Manitoba and Alexandria Avenues. The limit here would be 300 Igpm, although there is not even a hydrant here. The simple solution would be to loop the block, by constructing a six inch main from that corner, along Alexandria to Arsini.

Section 3 - WASTEWATER COLLECTION

3.01 General

For the purpose of this report, the term "wastewater collection" covers the sewer services from the property line, the sanitary sewer mains, the wastewater pumping ("lift") station and forcemain.

3.02 Extent of System

As is the case with the water distribution system, the sanitary sewer system services virtually the entire built up area of the Town. Several outlying areas (Augusta west of CPR; Alexandria east of hospital) where a few homes do exist, could be serviced but are not.

3.03 Sewer Pipe

The original system was constructed 30 years ago of concrete pipe. Subsequent extentions utilized primarily vitrified clay pipe. The most recent extensions (such as the Centennial Crescent subdivision) utilize PVC pipe. Council has adopted PVC Sewer pipe (SDR 35, ASTM D2241) for all future sewer construction.

The system is in good condition with few reported problem areas. Blockages are relatively few in number, while collapses or breaks are very rare. The slopes on most lines is equal to or greater than standard minimum grade. The typical design criteria for eight inch concrete or clay pipe is 0.4%, but most of Russell's lines comfortably exceed that figure. The only sewers found to have a slightly less than a desirable grade include that on Memorial Avenue from Heather to Mather, and along

Mather. These typically fall between 0.30 and 0.35%, which is marginal for clay pipe.

Pipe capacity far exceeds present day useage. For example, the line on Manitoba Avenue between the CNR and Alexandria Avenue, has a theoretical capacity of over 500 Igpm. Presently, peak flows contributed by the northeast area do not exceed 100 Igpm. This line has adequate spare capacity for approximately 1200 additional persons. If development in the northeast exceeds this figure, some of the flow could be routed down Augusta Street by the simple expedient of installing 160 feet of pipe between the two manholes on Augusta on either side of the CNR right-of-way. The line along Augusta has up to 500 Igpm of spare capacity. The limiting capacity will be the 10 inch trunk sewer on Ellice and Shell River Avenues, which has a 600 Igpm capacity. Presently, it is utilized to the extent of 200 Igpm, plus backwash flows of 400 Igpm. Any additional flows could overload the line and eventually create backups. The long-term solution would be a 10 inch PVC interceptor sewer running from Augusta and Shell River, on Ellice, past the water plant, down Railway Avenue (to avoid existing built up streets and services), along the CPR to the lift station. Such a line would be 2550 feet long, and have a capacity of 800 Igpm. Another solution, suitable for the short-to-medium term, would be to arrange with the MWSB that backwashing not be done during peak flow periods, such as rainfalls during the spring snow melt period, or days on which heavy summer rainfalls occur. This would probably make about 200 Igpm of useable capacity available, equivalent to an additional population of 600.

Another trunk line for which capacity was calculated is the 10 inch line on Russell Street, from Memorial to the lift station. This line has a capacity of 1100 Igpm. This will easily handle the proposed agricultural grounds development.

Development in the southeast would tie into a new deep manhole constructed in 1980 on Centennial Crescent (East) and Mather Street. However, southeast and south side development may be limited by the capacity of the Main Street 10 inch trunk sewer (PTH 16 to Russell Street), which has a 500 Igpm capacity. Development on the south side of town would also connect to this Main Street line. It may be safely surcharged to 600 Igpm, however, because of its depth. Present development utilizes only about 10% of its capacity. Therefore, development to the south or southeast could support an equivalent population of up to 1600 persons before the Main Street sewer would be overloaded.

3.04 Lift Station and Forcemain

The 30 year old sewage pumping station retains its original two cell configuration, with pumps in a dry pit connected by long drive shafts to motors at ground level. The original 5 hp Chicago pump/motor units were replaced within five years by 7.5 hp units. These units pumped 240 Igpm (singly) or 275 Igpm (in tandem). However, the water treatment plant built in 1964 frequently overloaded the station while backwashing filters (400 Igpm). In 1973, the station was overloaded sufficiently that council investigated the possibility of increasing capacity. In 1974, 30 hp Chicago pump and motor units were installed. As calibrated on 85 09 10,

each unit has a capacity of 405 Igpm operating singly, or 445 Igpm in tandem.

Based on operating records from 1979 to 1985, the pumps are again overloaded. On many occasions, both pumps run in tandem trying to keep up. On average, data suggests that the station is surcharged several times per year.

A gravity overflow prevents basement flooding. This overflow discharges into a swale which runs into the nearby slough east of PTH 83.

Based on the data available, peak day flows of up to 420,000 Ig have been recorded, equivalent to 292 Igpm. Based on a 2:1 ratio between peak hour and peak day flows, the peak hour flow that the station should be able to handle is 584 Igpm. This would require a 45% increase in capacity, to meet present requirements. Based on a projected future design population of 2400, a design capacity of about 800 Igpm would be required.

If the present six inch asbestos cement forcemain is retained, such capacity would require pumps of well over 100 hp. This is impractical because of the physical constraints of the station and the heavy power consumption.

Very few towns of this size have forcemains less than eight inches. A six inch main is more representative of a village with a population under 750 persons. Therefore it would be desireable to replace the forcemain; or to parallel it, with a 10 inch line. If all the sewage runs through a 10 inch PVC line, the pump capacity would be 750 Igpm (920 Igpm with two pumps running); if the flow is split between the existing six inch and the proposed 10 inch, the total flow would be 900 Igpm (1175 Igpm

with two pumps running). This would be adequate for an equivalent population of about 2700 persons.

The above all assumes continued use of the existing pumps. The problems associated with retaining the existing pumps include the poor access for maintenance and repair in the dry pit; the usual problem associated with poor delivery time and high cost of replacement parts (since these pumps are essentially obsolete on the Manitoba market); and the small capacity of the wet pit, which results in too frequent cycling (22 times per hour during the time that the pumps were being calibrated). This exacts a heavy toll on both electrical and mechanical components.

The usual answer to this problem is to convert the station to a total wetwell system with submersible pump/motor units. This would triple the storage capacity, thereby reducing cycling from 22 (typically) to 7 times an hour, which is much more acceptable. If the station is converted to a submersible system, initially pumps in the 20 hp range would be required. The station would be designed to permit larger pumps of 50 hp or more to be installed at a later date if growth warrants. Since submersible are installed on slide-away couplings, exchanging pumps would be a simple matter of pulling one up (no bolts or other mechanical connections required) and dropping another down. Some electrical panel changes would be required, but only in the area of motor starters, heaters and overload protection.

Many communities have converted nearly identical, old Chicago pump stations into submersible stations, including Hamiota, Grandview, MacGregor, Gladstone and Ste.

Rose. Maintenance staff have unanimously endorsed the benefits of proceeding this way.

Section 4 - WASTEWATER TREATMENT

4.01 General

For the purposes of this report, the term "wastewater treatment" covers the stabilization pond ("lagoon") system located west of the Town.

4.02 Description

The pond system is located some 2000 feet west of the built up part of the community. It is a three cell facility, located on a parcel of about 29 acres southeast quarter of Section 4-21-28 W. The Town owns an additional 18 acres of property immediately south of the existing cells.

4.03 Capacity

The primary cell has a surface area of 9.3 acres. The storage capacity of the three cells (as determined in accordance with Environmental Management Division Criteria) is 19 million Imperial gallons.

A primary cell capacity of 9.3 acres is equivalent to a design population of 2735 by EMD criteria. However, the storage capacity falls far short of Clean Environment Commission requirements. By EMD criteria used by the CEC, the pond system must have sufficient capacity to store all effluent between November 1 and May 15. Records show that during this 196 day period, the following actual flows have been recorded:

Year	1979-80	1980-81	1981-82	1982-83	1983-84	1984-85
Flow (M.I.G.)	18.6	21.0	22.1	19.5	22.3	25.1

The average over the past six years has been 21.4 million Imperial gallons, exceeding the 19 million design capacity.

The remaining 18 acres should be able to accommodate a fourth cell providing over 16 million gallons of additional storage. Combined with the existing 19 million gallons, the total 35 million gallon storage would be adequate for a population equivalent of approximately 3100 persons.

4.04 Effluent Quality

The CEC requires that all effluent discharged from the system not exceed a coliform concentration of 1500 (MPN). EMD data shows half of all samples collected exceeded the coliform limits. CEC criteria also stipulate maximum BOD_5 and NFR limits of 30 mg/l each. Of samples taken, half had NFR concentrations and one quarter had BOD_5 concentrations, in excess of the allowable limits.

4.05 Effluent Discharge Route

The effluent is discharged into a swale which drains into a slough south of the pond system. The slough drains into a tributary drain of the Silver Creek channel southwest of Russell. As water resources and environmental reports have indicated no evidence of negative impact, the EMD has not to this date contemplated legal proceedings as a result of either

the overloading of the pond system nor the violations of the discharge limits.

4.06 Operating Problems

Aside from the shortfall in hydraulic storage capacity (which threatens to overtop the cell dykes unless early emergency discharges are permitted), the pond system has one other operating problem. This is the build up of lime sludge in the primary cell, in the immediate vicinity of the forcemain outlet.

Prior to 1982, a six inch forcemain discharged effluent (which contains lime sludge produced by the water treatment plant) into either of the two old cells, at a velocity of about six feet per second, enough to carry the sludge some distance, before it all settled out. As a result, the sludge was spread out over a large area. With the construction of the new primary cell in 1982, and of a new eight inch forcemain extension into that cell, the velocity of the incoming sewage was reduced to about three feet per second. Now the sludge is mostly deposited within about 25 feet of the outlet.

As can be expected, operation staff are concerned that the outlet may eventually be plugged up, or, short of that, the lime mound may impede the flow of sewage coming out of the pipe.

Short of putting a six inch reducer on the end of the eight inch pipe (reducing the cross sectional area will increase velocity to close to what it was before), there is no simple solution to the lime mounding problem, except to dredge it out on a regular basis. Alternatively, the Manitoba Water Services

Board could be persuaded to construct its own lime sludge ponds, to keep the lime out of the town sewer system altogether. This would be fairly costly and the town would probably be expected to pay half the cost, as new capital upgrading works under the MWSB program must be financed under their cost sharing formula.

4.07 Inadequacy of 1982 Expansion

There has been some concern expressed by the Environmental Management Division engineers (who provide technical advice to the Clean Environment Commission) regarding the fact that at the time the third cell was proposed (1979-82), it was undersized. A number of memos and letters were forwarded by EMD staff to the consultants and to the MWSB, expressing their concerns and pointing out the inconsistencies between the consultant's feasibility report, their environmental submission and the calculations done by EMD staff.

The consultants proceeded with their original design in any case. Since the proposed construction was in response to a CEC order to construct a third cell, no public hearing took place, at which EMD might have been able to get both public recognition for what they had done, and a chance to demand that the expansion be of sufficient capacity.

Section 5 - SOLID WASTE DISPOSAL

5.01 General

This section could not be completed because information requested from the regulatory agency (public health inspectors) was not received at the time of writing.

5.02 Extent of Facilities

The Town of Russell has two disposal sites. One is a ten acre site in the northwest quarter of Section 27-20-28W, and is used for all non-metallic wastes. The other is a five acre site in the northeast quarter of Section 2-21-28W, and is used exclusively for derelict vehicles and waste metal.

5.03 Sanitary Waste Facility

The ten acre site is located on the east bank of a tributary of Silver Creek. This stream also conveys waters from the slough into which the town wastewater stabilization pond discharges.

Assessments done by public health authorities indicated that the location is good, being half a mile from the nearest dwelling, partially screened by trees, with little possibility of groundwater polution due to the geotechnical and hydrogeological characteristics of the site. The fencing is deemed adequate, and the access from PTH 16 is good.

The facility is operated as a conventional trench-and-fill operation. The site has been utilized to about half its capacity. The only identifiable problems include inadequate signage to designate which area is being used for dumping, inade-

quate earth cover over previously filed areas, and a somewhat inefficient pattern of trenching to ensure that all available areas are utilized effectively before all the land is used up. Expansion should not be difficult in view of the location and topography. Such expansion should not be required for 10 to 15 years at present day usage rates.

5.04 Metal Waste Facility

The metal waste dump has good access, adequate fencing, and easy expandibility, although it is not utilized to near its capacity. There is no reason to expect that it will require upgrading or expansion within the next 10 to 15 years, at present usage rates.

Section 6 - DRAINAGE

6.01 General

For the purposes of this report, the term "drainage" covers both internal drainage of rain and snowmelt waters originating within the community and snowmelt waters originating outside the community (primarily from the hills to the northeast) which drain through the town every spring.

6.02 Description of Internal Drainage

Land within the community is generally drained by open ditches paralleling the roads. The northern half of the north east area generally drains toward the west, then northwest into the low lying triangular area bounded by the CNR, CPR and Manitoba Avenue. The extreme eastern and southern half of the northeast area drains toward the east, just north of the CNR and east of Alexandria Avenue.

The extreme southeast area drains toward the slough east of Alexandria and south of the CNR.

The west half of the town drains toward the CPR and PTH 83, to the west, and into the sloughs located to the west of town.

6.03 Problem Areas

Because of the good grades available, internal drainage is not generally a problem for the town. The routing of external drainage from the hills located to the north east, along Manitoba Avenue, does pose a moderate "one day" flooding problem. The 24 inch culverts along Manitoba theoretically handle the flow well, but because they are often subjected to

freeze-thaw cycles, they are often blocked by ice when the "one day" peak runoff period occurs. There is no feasible solution to this, except to construct an "ice proof" storm sewer. The short term problem would not justify this at the present time.

If the northeast area is developed, it is unlikely that the spring flooding problem would be any worse. The present flooding results from the steep topography combined with frozen ground, an absence of natural barriers and a rapid snow melt. The water supply has no other place to go. Urban development, with an increased area of "impervious" roofs and pavement, would not likely present less of a barrier to the rapid run-off.

However, urban development in the northeast would create similar flooding problems during heavy summer rainfalls. At present, heavy rain does not run off quickly in large quantities, as much seeps into the ground. When the area is urbanized, with a large area of roofs and pavement, heavy storms will create a rapid run off that will run down Manitoba Avenue, and create spring run-off like flows down Manitoba Avenue. Council should consider requiring construction of 1700 feet of 24 inch storm sewer on Manitoba from Alexandria to the CNR, as a pre condition to allowing full scale urban development of the northeast area. Alternatively, internal drainage of any northeast area subdivision should be routed southward to the CNR lines. Depending on the extent of the proposed developments, this way would not be practical if the developments do not extend southward all the way to the CNR.

The only other identifiable major drainage problem exists at the intersection of Russell Street and Memorial Avenue. A considerable portion of the east to west drainage is funnelled through this intersection, and any large scale devel-

opment of the agricultural grounds would also be drained to this point. A 300 foot length of 30 inch storm sewer is required on the east side of Memorial south of Russell Street, parallel to the school, to overcome localized flooding there.

6.04 Lot Grading

Because of the poor grading of some individual parcels of private property, a number of minor problem areas exist. Most can only be rectified by proper landscaping of the private property to ensure drainage runs away from the foundation, not toward it.

One area where private landscaping will not solve a very localized problem, is the backlane east of Main between Westbourne and Assiniboine. Water coming across the large vacant lot at Pelly and Assiniboine, runs up against the back walls of businesses along this lane, and sometimes floods through the back doors. The only way to handle this problem is to lower the elevation of the lane to ensure that all drainage is intercepted and conveyed south to Assiniboine, where it will drain west.

Section 7 - TRANSPORTATION

7.01 General

For the purposes of this report, the term "transportation" covers the road network and parking areas within the Town, and trunk roads leading into the community.

7.02 Extent of System

The Town is located at the junction of several major asphalt and paved Provincial Trunk Highways. PTH 16 comes in from the southeast and runs west to Saskatchewan, along the south end of the Town. PTH 45 runs east from the south end of Town. PTH 83 runs north along the west edge of the community. Government road allowances form the northern (Manitoba Avenue) and eastern (Alexandria Avenue) limits of the existing built up area, and beyond the community, gravel roads on these allowances extend north and east at the north-east corner, to provide access from rural areas.

7.03 Internal Paving

Within the community, most all roads are paved with asphalt. Curb and gutter exists primarily along Main Street, with other streets having ditches on either side. The asphalt surfaces are generally in fair to good condition, and typically have a service life of 20 years before potholes, heaving and alligator cracking deteriorate them to the point where reconstruction is required.

7.04 Traffic

No traffic problems have been noted or identified, with two exceptions. One is the northwest access to PTH 83. Presently this is routed from Main Street west on Augusta, across the CPR tracks northwest to PTH 83. A more efficient access has been planned by the Department of Highways along Arsini west of Main Street. This is tied in with a proposed reconstruction of paving on the north part of Main Street. This project will proceed upon receipt of appropriate budgetary allocations from the Department of Highways. The other exception is that a frontage road is required along the south side of PTH 16 east of Memorial Drive. This area is especially suitable for commercial development, but traffic problems would be inevitable without a frontage road.

7.05 Parking

No general parking problems have been identified. Cox's IGA has an individual parking problem, which the proprietor is attempting to rectify by purchasing vacant lots in the southwest corner of the intersection of Russell and Main Streets, to create a parking area.

7.06 Roads in New Development

Conventional engineering wisdom dictates removing all silty soils from the active layer under pavement. This would be quite costly. Therefore, a better approach would probably be to excavate only as far as necessary to obtain proper grade, and providing that there is a homogeneous layer exposed (any obvious pockets of poor, soft material being removed), fill with C and A bases and top with a three inch layer of asphalt.

In the case of areas to be provided with only gravel roads, only obviously poor, soft areas should be excavated. There is merit in allowing new areas to be gravel paved for several years prior to asphalt or other hard surfacing being applied. It will permit utility trenches to settle and any obvious soft spots will probably be noticeable after several years of traffic. These can then be corrected prior to incurring the major expense of asphalt pavement.

Section 8 - GEOTECHNICAL

8.01 Topography

The Town of Russell is located on a local topographic high point. The ground surface generally slopes down from a high of elevation 1890 feet at the northeast corner of town to a low of elevation 1850 feet at the south end of town and a low of elevation 1820 feet along the east side of town. Conjuring Creek has its beginnings to the north of the town. It flows west and then northwest to the Assiniboine River. The topography in the area surrounding the town varies from undulating to broadly rolling and is characterized by irregular smooth gentle slopes. The relief varies from ten to 100 feet. Numerous undrained depressions exist in the vicinity. Two large depressions exist immediately east of the Town and two similar, but smaller depressions exist on the west side of the town.

8.02 Drainage

The town is elevated relative to the surrounding land and drainage is generally towards small depressions throughout the area. These depressions do no normally drain. Overall drainage is towards the south, east and west.

8.03 Soil Conditions

The soils in the Russell area generally consist of a shallow (less than 25 feet) layer of glacial till overlying shale bedrock. In the vicinity of Conjuring Creek, the shale bedrock is exposed in many places. The over-

burden generally consists of a silty, sandy clay with gravel, but may include deposits of sand and gravel. In some places the glacial till is interspersed with sand layers. The glacial till is end or recessional moraine. Within the boundaries of the town the shale bedrock may vary from a few feet to up to twenty-five feet below the ground surface.

Typically the soils within the town limits consist of a thin layer of organic clayey silt over five to 15 feet of stiff to hard, medium plastic, sandy, silty clay with gravel (glacial till) overlying a grey, weathered, hard shale bedrock.The till may be interspersed with sand and gravel layers.

Typically the till consists of 22 percent clay, 44 percent silt, 31 percent sand and three percent gravel. It is classified as a medium plastic clay according to the Unified Classification System. The till has dry density of about 112 pounds per cubic foot. It is moderately compressible and has a low to moderate swelling potential. It is generally not considered very frost susceptible, except in areas where the soil is classified as a low to non-plastic silt. The water table is generally at or near the till/shale interface.

The shale is weathered and fractured. It is usually described as a clay shale. It has a high bearing capacity, which may decrease in the presence of excess moisture. The shale is generally considered to have a low to moderate swelling potential at shallow depths. However, since the water table is at the shale surface, swelling is not expected to be a serious problem

8.04 Foundation Considerations

Trenching conditions within the town limits are generally good. The soils are stiff to hard and should stand up quite well, except possibly in areas where the till is interspersed with sand and gravel layers. Generally water should not be a problem during trenching, except maybe in areas where sand and gravel layers exist within the till, and in low undrained areas.

The water table is normally at or near the till/shale interface. Local areas of higher water tables may exist in isolated locations where sand and gravel layers are interspersed with the clay.

The glacial till has a stiff to hard consistency with a high bearing capacity. It is low to moderately compressible with a low potential for swelling. The shale is very hard and has a high bearing capacity. It has a low to moderate potential for swelling if exposed to excess moisture.Generally, shallow footings should be adequate for most single storey construction, although grade beam on cast-in-place piles should also be acceptable. Construction in contact with the shale should provide for proper drainage.

The permeability of the till is very low.

The till is generally not frost susceptible, except maybe in silty areas with excess moisture conditions.

Section 9 - PROPOSED EXPANSION AREAS

9.01 General

Each of the proposed areas for which urban development may be possible, has been evaluated in terms of the ability of the existing infrastructure to service them.

9.02 East Area (NW 1/4 Sec 2-21-28W)

1. Water

This area presents some problems with regard to adequate flow and pressure. Provided that all new watermains in the area are six inch PVC, up to 4000 feet of unlooped main can be laid while still maintaining 400 Igpm fireflows, provided that the tower is in service. If the tower is not in service, there will be effectively no fire protection. This should be carefully considered since Council wishes to disconnect the tower during winter months. If fire protection is to be maintained while the tower is out of service, an eight inch feedermain would have to be constructed from the existing eight inch line on Westbourne which supplies the tower.

The preferred main connection point for any watermain extensions should be the intersection of Augusta and Alexandria. This is so because this point is served by a watermain loop, whereby water comes from the tower in two lines (MacDonald to Augusta to Alexandria; Westbourne to Alexandria to Augusta).

If extensions are made from the intersection of Manitoba and Alexandria, the Arsini to Manitoba loop is essential.

2. Sewer

This area presents a sewer servicing challenge. About 100 acres may be serviceable but nearly half requires from two to six feet of fill. Since the area requiring fill falls in the middle of two parcels of more elevated and easily drainable land, some creative planning must be employed in laying out any proposed subdivisions here. The northeasterly half of the lands would drain into manhole C8 (Manitoba and Alexandria) while the southwesterly half would drain into a new manhole between D6 and D7 (at Augusta and Alexandria).

3. Drainage

The bulk of the natural drainage runs east along Manitoba to the existing built up town. The southeast portion generally drains towards a slough on the east half of Section 10-21-28W. To minimize the drainage load being directed to the existing built up part of Town, it is recommended that the southeast half of the development area be drained to the slough, while the east drain toward Alexandria and Manitoba.

4. Traffic

Road access may be conveniently provided from any point along Manitoba. Two streets extend off Alexandria into the proposed development area, namely Augusta and

Westbourne, and these should be retained as westerly points of access to the area.

9.03 Northeast Area (S/W 1/4 Sec 11-21-28W)

1. Water

The limitations of existing watermains in this area have been discussed in Section 9.02.1. This area presents an additional challenge in that elevations above 1885 feet could not be provided with the required fire protection unless an eight inch feedermain is built from the tower to this area. Domestic pressures and flows will also suffer, once elevations exceed 1885. If no feedermain is built, adequate looping is essential, even with lower elevation areas.

The above assumes that the tower remains in operation. Without the tower, no effective fire protection would be available. If the eight inch feedermain is built from the existing eight inch Westbourne Street line, to the development, fire protection would be available up to ground elevation 1875, but not above. Since the peak elevation here is near 1915, this would be a serious problem. The only solution would be to extend the existing 10 inch PVC feedermain on Westbourne from Main Street all the way to Manitoba and Arsini, and extend eight inch mains into the development. The cost would far exceed that of renovating the water tower for year round operation.

2. Sewer

Some 135 acres of land in the southwest corner of this quarter section may be serviced by gravity sewer with no significant difficulties. The entire area may drain west into manhole J16, (on Manitoba west of CNR) or the southern two thirds may drain into manhole C8 (at Manitoba and Alexandria).

3. Drainage

The north half of the proposed development area drains north toward Conjuring Creek, while the south half drains westward along Manitoba Avenue. There is no alternative for the south half except to drain along Manitoba. As stated in Section 6.03, a pre-condition to development here should be to build a storm sewer should be built on Manitoba from Alexandria eastward to prevent the flooding problems from getting worse. The north half will have to be drained west to Alexandria, thence north to Conjuring Creek. This is because it is unlikely that the development will extend into the low lands adjacent to the Creek, and the farmer which will retain these lands is unlikely to permit urban streets to discharge storm run-off across his land.

4. Traffic

Road access may be at any location along Alexandria or Manitoba.

9.04 North Area (SE 1/4 Sec 10-21-28W)

1. Water

The area north of Manitoba Avenue, west of Alexandria, and east of the CNR and CPR tracks, presents few pressure/flow problems for residential developments. With the present grid, using either the tower and the plant as a source, the entire area as far north as Conjuring Creek may be developed, serviced, and protected to the 400 Igpm fireflow level, provided that loops are constructed on both the existing system (two lines between Arsini and Manitoba, on Main Street and on Alexandria), and that the watermains in the development are adequately looped. This 400 Igpm fireflow could then be delivered whether or not the tower remains in service.

2. Sewer

Virtually all land above 1850 elevation, north of Manitoba, west of Alexandria, and east of a line drawn due north from the intersection of the CNR tracks and Manitoba Avenue, is serviceable by gravity sewer, but the sewers would have to discharge into manhole J16 (on Manitoba at Memorial). No other more easterly manholes on Manitoba are sufficiently deep.

3. Drainage

The natural drainage tends to flow in a general northwesterly direction toward Conjuring Creek. Because it is unlikely that proposed developments will extend into the low lying lands adjacent to the creek, any

urban drainage must be made to follow the CNR and CPR track embankments, drainage along which eventually finds its way to the creek. Permission may be required from the railways before this is implemented. The alternative would be to construct a watercourse across the low lying farmlands, which would require either an easement or right-of-way.

4. Traffic

Road access to this area may be made from any convenient location on Alexandria Avenue. Access from Manitoba Avenue will be limited, because there are no open load rights-of-way north of Manitoba. There are some gaps between developed lots, near Langford Street, which could be developed into access points.

9.05 West and Northwest Area (NW 1/4 Sec 3-21-28W)

1. Water

Because of the low elevation, the west and northwest will have no difficulty with being provided 400 Igpm fireflows, by means of six inch watermain extensions

In the event that commercial or light industrial land use is adopted here, minimum fireflows of 800 Igpm must be considered as a minimum. Eight inch PVC mains would convey this. A ten inch feedermain would permit 1600 Igpm, which would be more desireable for such an area. The proposed disconnection of the water tower will in no way affect this proposed development area.

2. Sewer

The area west of the CPR cannot be serviced by gravity sewer because of its low elevation. However, all presently unserviced area east of the CPR are serviceable.

3. Drainage

Natural drainage in the area is toward low lying sloughs along PTH 83. Any developments would continue to use this drainage pattern.

4. Traffic

No access will likely be granted by the Highway Traffic Board directly onto PTH 83 so road access must be made from existing town streets, particularly Russell Street and Ellice Avenue.

9.06 Southern Area (Sec 34-20-28W)

1. Water

For any expansion of service to the south, a 10 inch feedermain must be constructed on Memorial south of Westbourne. Any large development would also require that the ten inch main be connected, on Westbourne, from Memorial to the existing 10 inch line at Westbourne and Main. Such a line could conceivably service the entire section, with fireflows of 800 Igpm as well as average domestic flows. The exact flow available at any point within a development would depend on the size of branch line extensions chosen. The 10 inch feedermain could run

along any alignment. If it is contemplated to provide water service to PTH 16 highway frontage south of the existing built up part of Town, the line should be 10 inch, if ultimate development of the section is contemplated. Any smaller sized mains would provide less fire protection.

The proposed disconnection of the tower will not affect this proposed development area.

2. Sewer

The only unserviced area serviceable by gravity sewer extensions is an area immediately adjacent to the municipal road allowance (north boundary of the Section) and east of Main Street. The topography is such that elevations decline steadily toward the southwest. The low point in the Section is immediately west of the Town's disposal grounds.

Development of this Section will be particularly difficult in the area of sewer servicing, since the low point is the farthest possible distance from the existing built up area of Town. Any orderly phasing of developments, starting close to Town and slowly spreading southward, will result in a multiplicity of lift stations.

One possibility that appears feasible, would involve establishing a lift station in the northwest quarter, and constructing a forcemain directly into the primary cell of the lagoon. Considering that any large scale development of this section will surely overload the existing lift station and forcemain (even if they are

upgraded), and possibly the Main Street trunk sewer as well, the concept of a totally separate wastewater collection system for this section of land seems quite prudent.

If instead, south side developments connect to existing manhole H4 (on 10 inch trunk sewer main, at Main Street and the south G.R.A.), the limitation of this sewer must be considered. The existing line can handle a total additional equivalent population of 1600 persons, in both the south and southeast.

3. Drainage

The section is traversed by an intermittent creek running from just south of the drive-in theatre, in a general southwesterly direction, toward the dump, where it connects with an intermittent creek which flows south along the east side of the airfield, toward Silver Creek. All drainage from proposed developments here should follow the existing natural flow to the southwest. Problems may arise if smaller developments occur in the north part of the Section, which have no direct access to the creek. Also, west to east drainage is impeded by the CPR embankment, and any development proposed to discharge into ditches on CPR right-of-way would require obtaining prior approval.

4. Traffic

Any development along PTH 16 south would require construction of a frontage road. Existing agricultural access is provided by municipal roads on the south and west boundaries of the Section, as well as PTH 16.

9.07 South East (SW 1/4 Sec 2-21-28W; NW 1/4 Sec 35-20-28W)

1. Water

The limited capability of the existing grid to provide fire protection to the southeast (especially the hospital) has been documented earlier. Any significant southeasterly development would require the Memorial/ Agricultural Grounds 10 inch feedermain to be constructed. Because of the prevailing topography, no other problems are anticipated once the feedermain is built.

However, if 800 Igpm (commercial level) fireflows are desired, the 10 inch feedermain would have to extend to the junction of Alexandria and PTH 45. If the level of fire protection is only to be to the 400 Igpm residential level, only a six inch main need be run from Mather to PTH 45.

The proposed disconnection of the water tower will not affect any of the above.

2. Sewer

Some 50 acres of this area, primarily north of PTH 45, is serviceable by gravity sewer connected to the new manhole E8 on the east leg of Centennial Crescent. Other manholes on Mathers are too shallow to permit any easterly extensions.

Any servicing on the east side of PTH 16 south will require pumping. A lift station on the east side of PTH 16 across from the drive-in theatre would provide a con-

venient point to drain virtually all sewers in the west half of Section 35.

3. Drainage

The area north of PTH 45 drains toward the slough northeast of the hospital, on the east side of Alexandria. The area south of PTH 45 drains toward the south, in the general direction of the creek described in Section 9.06.3 There should be little difficulty in draining any proposed developments in the direction of existing natural drainage.

4. Traffic

Further development along the east side of PTH 16 south will require frontage road construction. It is unlikely whether this would be required along PTH 45, because of the significantly lower traffic volumes along the road.

9.08 Agricultural Society Grounds

1. Water

The problem with adequate fireflows/pressures in the southeast has already been described in Section 2.05. Construction of the Memorial Avenue feedermain would rectify this, and extension of the feedermain across the agricultural grounds would facilitate proposed urban development of this area.

2. Sewer

There is no particular problem with regard to gravity sewer extensions into the grounds. The north half may conveniently drain westward with the falling topography, into the manhole at Lawrence and Memorial, while the south half may drain either into that manhole or into the one at Heather and Memorial. The southmost quarter can drain into either of the above or into manhole M2, on Memorial halfway between Mather and Heather. Care must be taken not to connect mistakenly to manhole M3, which is located immediately adjacent to M2. There are two parallel sewers on this part of Memorial, one being deep, the other shallow.

3. Drainage

Natural drainage on the property tends toward the northwest, as there is a fifteen foot drop in this direction. Developments would drain toward Memorial, and construction of a storm sewer (Section 6.03) toward Russell Street should be a precondition to development of the grounds. Full scale development of the grounds may require that this storm sewer be extended, at 36 inch diameter, along Russell, west across Main Street, toward the slough on Lawrence Street near PTH 83. The necessity of this would depend on the scope and density of development.

4. Traffic

Road access may be made into any developments here, from any convenient point along Memorial and Bonny Avenues.

Section 10 - SUMMARY

10.01 General

This section summarizes the limitations of each of the existing infrastructure sectors, the scope of proposed upgrading schemes, estimated capital costs for each scheme, and the relative priority of each, from a technical point of view.

10.02 Water

The raw water supply works (well, pumphouse, pipeline) are adequate for an equivalent population of 3500. The water treatment (treatment, storage, pumping) is adequate for about 2400, although process limitations will require blending raw and treated water beyond about 2150.

The water distribution system has grave inadequacies. It is unable to supply adequate fireflows to several large areas. Discontinuing use of the tower in winter aggravates this. Some minor looping of existing mains plus construction of a feedermain pipe from the centre to the southeast, will rectify that situation.

10.03 Wastewater

The wastewater stabilization pond (lagoon) is hydraulically overloaded. A fourth cell should be constructed to increase storage capacity.

The sewage pumping (lift) station/forcemain are operating at, if not beyond, their capacity. The pumps should be replaced and the forcemain should be twinned. The initial stage of renovation would support an equivalent population of 2700.

Most trunk sewers have adequate capacity. Extensive development in the north and northeast will require construction of a west side interceptor sewer to relieve the trunk sewer on Ellice and Shell, which is running near to capacity. This line would increase north/northeast trunk capacity from its present 900 (equivalent population) to 3300 persons. The Main Street trunk sewer has existing unused capacity to service an equivalent population of up to 1600. The Russell Street trunk line has a capacity to handle an equivalent population of up to 3300.

10.04 Solid Waste

Solid waste disposal is not expected to present any problems in the forseeable future.

10.05 Drainage

Surface drainage is not expected to be a significant problem, except that additional development will require construction of a storm sewer on Manitoba Avenue (east of the CNR to Alexandria) and of another on Russell Street (from Memorial to PTH 83).

10.06 Transportation

TOWN OF RUSSELL

ESTIMATE OF COSTS - UPGRADING CENTRAL SERVICES

1.	Renovate Lift Station (submersible pumps)	$ 100,000.
2.	New 10" Forcemain	$ 75,000.
3.	Additional W.W.S. Pond Cell	$ 200,000.
4.	Manitoba Avenue 24" Storm Sewer	$ 175,000.
5.	Memorial 30" Storm Sewer at Russell St.	$ 25,000.
6.	Russell St. Storm Sewer, 36", to PTH 83	$ 325,000.
7.	Memorial Avenue 10" Watermain	$ 150,000.
8.	Extend 10" Watermain from Memorial to Alexandria	$ 125,000.
9.	Extend 10" Watermain on Heather to Main	$ 50,000.
10.	Loop 6" Watermain on Alexandria to Manitoba	$ 15,000.
11.	Loop 6" Watermain on Main to Manitoba	$ 15,000.
12.	Alexandria 8" Watermain, Tower to Manitoba	$ 125,000.
13.	Alexandria 10" Watermain, Tower to Manitoba	$ 150,000.
14.	Renovate Water Tower	$ 50,000.
15.	West side 10" Interceptor Sewer	$ 250,000.
16.	Access Road (PTH 83 to North Main)	*
17.	Frontage Road (PTH 16 south)	*

*Asterisk denotes that the costs are the responsibility of the Department of Highways.

With the exception of the need to upgrade access from PTH 83 to North Main Street, and to construct a frontage road on PTH 16 south, no traffic problems were identified.

10.07 Estimated costs

The following table presents estimated capital costs of various schemes, including construction, engineering and contingency costs, and assuming anticipated 1986 construction cost levels.

10.08 Priorities

In terms of relative priority, the proposed schemes are ranked as follows:

High Priority -
- Memorial Ave. 10" Watermain
- Forcemain
- Water Tower Renovation
- W. W. S. Pond Fourth Cell

Medium Priority -
- Miscellaneous Watermain Looping
- Lift Station Renovation
- Extend 10" Watermain to Main and to Alexandria
- PTH 83 - Main St. North Access

Provisional High Priority (i.e., projects are high priority if significant development takes place only in the area designated)
- West Side Interceptor sewer (north, east or northeast developments)
- Alexandria Ave. 8" or 10" Watermain (east or northeast developments)
- Memorial Ave. Storm Sewer (ag. ground development)
- PTH 16 frontage road (southside development)

Provisional Medium Priority
- Russell St. Storm Sewer (ag. ground development)
- Manitoba Ave. Storm Sewer (east or northeast developments)

PART III - VILLAGE OF BINSCARTH

Section 1 - Water Supply

1.01 Source Description

The Village is served by two 20 year old wells, 30 feet apart, located about a mile southwest of the Village in the Valley of Silver Creek. Each well is about 50 feet deep and each is equipped with a 5 hp Jacuzzi submersible pump, a Monitor pitless unit, four inch casing and 10 feet of screen.

The wells are drilled into a sand and gravel which occurs in a major bedrock channel which underlies the Village and which outcrops into the Silver Creek Valley. The water developed at this location was found to be of better quality than at sites nearer the community.

Although each well pump is theoretically capable of delivering 60 Igpm, they are throttled back. Each well produces about 30 - 35 Igpm, according to a 1980 report by Water Resources Branch hydrogeologists. The capacity is limited by the design, construction and deterioration (through age and because of the scaling nature of the water) of the wells themselves. The aquifer itself has the capability of supplying up to 120 Igpm on a sustained basis; adequate for an equivalent population of some 1200 persons. A single 10 inch well would have a capacity of about 100 Igpm. The existing wells have not experienced any particular or unusual operating difficulties.

1.02 Supply Works

The raw water supply pipeline consists of a six inch cast iron line running north and connecting to a former CPR pipe-

line (also six inch cast iron) running north east to the water plant located in the former CPR water tower. Few operating problems have been experienced. The capacity of the pipeline depends on the operating pressure of the pumps. Presently, the operating pressure is about 60 psi at the wells. Since this consists almost entirely of elevation head (friction losses being very low, about 2 psi at 65 Igpm with both wells running), much higher rates can be pumped through the pipeline with little increase in pressure. For instance, at 130 Igpm, the input (pump) pressure at the well site would have to be increased by 5 psi, which should not jeopardize the pipe. Theoretically, the pipe should be suitable for 150 psi, but any corrosion deterioration or other defects might cause leaks or breaks at any radically elevated pressure. It should be safe to operate the line at up to 100 psi (equivalent to nearly 250 Igpm, or suitable for a population equivalent of some 2500 persons).

1.03 Treatment

The original treatment works were constructed in 1965 in the abandoned CPR water tower. Treatment consists of feeding a solution of potassium permanganate (an oxidizing agent which precipitates iron and manganese) into the raw water, filtering in two four foot diameter manganese greensand filters (in which the media acts as an ion-exchange zeolite to remove iron and manganese), and chlorination (for disinfection). The process is usually quite effective if applied properly. Samples of raw and treated water were submitted in late August to the provincial laboratory for analysis, so that actual operating effectiveness could be determined. The results indicate that the treatment process is not working properly:

Parameters	Raw Water	Treated Water
Iron	0.83	0.61
Manganese	0.42	0.36
Turbidity	L5	L5
Colour	8	1

Our evaluation has suggested that either insufficient potassium permanganate is being injected, and that the greensand is being depleted or exhausted by long-term permanganate starvation (i.e., underfeeding). However, regardless of the filters' present condition, their capacity is marginal.

The limiting factor in the plant is the size of the filters. Traditionally, the flow rate of 2 gpm per square foot was used as a design standard. By this measure, the filters are adequate for only 50 Igpm (25 per filter). It is not unusual to run at slightly higher rates, but unless there is sufficient contact time to allow the permanganate to oxidize the bulk of the iron and manganese, treatment efficiency will suffer. In this case, contact time is limited to the small water storage capacity of the filters. Therefore, it is prudent to rate the treatment capacity at about 60 Igpm, roughly the capacity of both pumps working together. This capacity is adequate only for the present population (approximately 480) and not very much more. Based on a 20 hour operating day, the plant can produce 72,000 Ig per day. The average daily consumption (since consumer meters were introduced in early 1984) has averaged 35,000 Ig/day, with peak days of about 64,000 Ig/day (one day the meter recorded 112,000 Ig, but this coincided with a particularly bad late winter water break). It would be prudent to assess the present treatment capacity as being adequate only for an equi-

valent population of about 500 persons. There is no room in the old tower for larger filters; additional capacity would entail constructing an all new plant.

1.04 Storage

The treated water is stored in an 80,000 Imperial gallon concrete reservoir constructed in 1980 adjacent to the plant. By MWSB/MOE Standards, Binscarth should have storage equal to 1.25 times the sum of the required fireflow (which is two hours at 400 Igpm for a community such as this) plus one quarter of the peak day flow (which is one quarter of 64,000), for a net value of 80,000 Ig. Therefore, the reservoir is adequate for present conditions only. In the event that more capacity is desired, there is room on the present site (leased from the CPR) for additional storage and treatment works, to any size as may be realistically required.

1.05 Pumping

Distribution pumping is provided by two electric (domestic) end suction centrifugal pumps and one gasoline engine driven (fire duty) emergency pump, all installed in 1980. Each electric pump is rated at 75 Igpm at 65 psi T.D.H., while the standby pump is rated at 400 Igpm. One electric pump is equipped with a hydrostatic variable speed drive to permit constant discharge pressure through the entire operating range of the pump. The other electric pump cuts in on low pressure or if controlled manually.

Present peak hour demand at Binscarth is approximately 80 Igpm, based on a calculated peaking factor and verified by operator's observations of the frequency of the second pump cutting in on low pressure situations. By this standard, the

domestic pumps are only adequate for present day requirements.

Prior to installation of consumer water meters, consumers used an average of 88 gallons per person per day. Over the 16 months since metering was introduced, the average consumption has reduced to 73 Ig per person per day. Prior to metering, the northeast part of the village often suffered from poor pressure during peak demand periods. This has improved with metering, which seems to have reduced wastage. Few low pressure complaints have been registered recently.

The main reason for a large potential distribution system pressure differential is that the pumps are located at a low elevation in the southwest. The area in the northeast lies some 40 feet higher than the plant floor, equivalent to a loss of 17 psi. If the domestic pumps are struggling to maintain 40 psi at the plant (as they have done in the past) and friction losses amount to several psi, the northeast area will have only 20 psi or so, in residual main pressure, which will certainly cause consumer complaints.

In the event that growth and/or resurging per capita consumption cause a recurrence of the pressure problems, the solution would be to install one more pump to run in tandem with the others, or to replace the existing electric pumps.

The fire pump is adequate under MWSB guidelines for a population of 800. It is sufficient for 400 Igpm residential level fireflows only, not for 800 Igpm commercial level fireflows.

In the event that greater capacity is required, a new plant would be required because of space constraints in the existing tower building.

Section 2 - Water Distribution

2.01 Extent of System

The water distribution system services essentially the entire built up area of the Village.

2.02 Water Main Pipe

The distribution grid consists primarily of six inch cast iron pipe with bell and spigot "push on" joints, mainly laid during the original construction in 1965. Extensions constructed since 1978 have utilized six inch PVC (CSA Standard B.137.3, Series 160). Compared with most communities, Binscarth has had little trouble with its iron lines. Most are still in good condition, although at least one or two breaks occur each year.

The system is of partially looped design. Loops cover the central core, but most outlying lines are deadended.

2.03 Appurtenances

The original system utilized obsolete McAvity Fig. 9658-0 sliding gate hydrants and AWWA C500 type gate valves. Newer construction utilized modern compression type fire hydrants (in particular Canada Valve Century and McAvity M67S models), and resilient seat AWWA C509 type valves.

2.04 System Capacity

Presently, the distribution system imposes no restrictions on domestic service. Any pressure problems that may exist

(see 1.05) are the result of inadequate pump capacity and/or excessive water use (wasteage prior to metering). Similarly, there is no difficulty in delivering 400 Igpm fireflows through the community, even at the high point in the northeast.

The situation is not as rosy when future extensions are contemplated. Although extensions to the east (east of PTH 16, up to about William Avenue), south (anywhere), north (to the limits of the golf course) and west are generally capable of being serviced with six inch mains which will provide adequate pressure for either domestic or fire flows. The northeast area and north of the golf course, present fire flow problems related to both elevation and distance (i.e., friction losses) through the existing six inch distribution grid. If fire protection is to be maintained through extensions in these areas, there must be a feedermain built from the plant to the new development. An eight inch PVC main would handle any foreseeable growth. However, it should be noted that even a feedermain would not be able to overcome losses due to excess elevation gain. In practical terms, service can not extend beyond any point where the elevation exceeds 1760 ft., unless booster pumping stations are built.

Section 3 - Wastewater Collection

3.01 Extent of System

The wastewater collection ("sewer") system in Binscarth services virtually the entire built up area of the community.

3.02 Sewer Pipe

The original system built in 1965 and all extensions constructed up to 1979 incorporated vitrified clay pipe. More recent extensions have utilized PVC (ASTM D2241, SDR 35). All mains are eight inch diameter. Pipes are generally laid at greater than minimum required slopes (0.4% for 8 in. VCT). Some slopes are in fact much greater than minimum (2% and more). There are no reported problems with either solids buildups or breaks.

As a result of the substantial slopes, sewer capacities are quite good. There is no way to measure sewage flows, since the system has no lift station (all flows are conveyed to the stabilization pond (lagoon) by gravity alone). However, it may be prudent to assume that, based on the relatively high water consumption, on the relatively good drainage characteristics of the sandy soil, and on a comparison with similar communities, a peak sewage flow of 150 Igpm would not be out of line (six times the average water consumption rate). By comparison, the capacity of the trunk sewer running to the stabilization pond is 420 Igpm, suitable for an equivalent population of approximately 1350 persons.

The collector sewer running on Russell Street has an average 1.2% slope, and is capable of conveying over 500 Igpm. This should be adequate for any northeast developments supporting equivalent populations of over 1500 persons. The sewer on Fifth Avenue and on Thacker to Fifth, has a capacity of 300 Igpm, and this can support an equivalent population of over 900 persons in the northwest area. The capacity of the Second Avenue South sewer is about 300 Igpm, again suitable for an equivalent population of about 900 persons in the southeast area. The capacity of the James/Jemima/ PR 476 sewer is 400 Igpm, adequate for an equivalent population of about 1200 in the east development area.

In summary, existing sewer capacity is sufficient for any foreseeable development in and around the community, up to a total equivalent population of 1350 persons, which is the limit for the trunk sewer.

Section 4 - Wastewater Treatment

4.01 Description

Sewage is treated in a conventional two cell facultative wastewater stabilization pond (lagoon) located about 1600 feet southwest of the Village. The site is fenced. The pond cells were constructed in 1966. The operation is regulated by Provincial Sanitary Control Commission (now Clean Environment Commission) Licence No. C-b-121.

4.02 Capacity

An evaluation of the facility has determined the design capacities to be as follows:

Primary cell effective area	1.6 acres
Allowable organic loading (equivalent to a population of 472)	80 lb/BOD5/day
Storage capacity	4,820,000 Ig.

4.03 Loading

The present organic loading on the facility (using EMD criteria) is about equal to the capacity of the primary cell (80 lb/BOD5/day). The hydraulic loading is more difficult to assess because there is no way to measure sewage flows. (There is no lift station). An assessment in 1979 by the Environmental Management Division determined the 196 day flow (from November 1

to May 15, during which time discharges from the cells are not permitted) to be 5,130,000 Ig, which exceeds the official capacity of the cells.

However, because the secondary cell is not lined with clay, but rather, is constructed in sandy soil, there is never any liquid stored in that cell. Effluent discharged from the primary to the secondary cell simply seeps away through the floor, presumably into Silver Creek.

4.04 Effluent Quality

Samples taken by the EMD in the period 1977 to 1979 indicate BOD5 levels to be well below the prescribed 30 mg/L discharge requirement. Only one sample in five taken showed NFR to exceed the 30 mg/L limit. Since these represent values taken from the primary cell, they indicate a good level of treatment.

4.05 Effluent Discharge Route

The Secondary cell discharge pipe (the valve on which has never been opened) is directed to Silver Creek. It is assumed that effluent seeping through the sandy soil under the cell, surfaces in Silver Creek. There are no nearby downstream users (either direct surface users or wells) nor any adjacent homes. The environmental impact would be considered negligible.

4.06 Operating Problems

There have been problems relating to the freezing of the overflow between the cells, which should be recti-

fied by constructing a new overflow. The valved interconnecting pipe is also affected by freezing at the bottom of the Secondary cell. Again, some remedial work could be done, such as construction of a deep sump around the pipe to ensure that there is always liquid around the outlet.

4.07 Facility Upgrading

Technically, the facility requires upgrading to increase both organic loading capacity (larger primary cell) and increase storage. However, because of the way the secondary cell seeps, there is no practical requirement for increased storage at this time.

The Clean Environment Commission and Environmental Management Division would consider the existing cells to be in violation of current accepted standards, but because there is no apparent negative environmental impact, and because no one has ever registered a complaint, they have relegated any official assessment of the works to low priority status. This would change if either any complaints are registered or if they become aware of any large scale development being proposed, which could seriously overload the facility.

In the event that upgrading is required, it would proceed in the following steps:

1. Line secondary cell with clay, bentonite or other impervious material.
2. Expand primary capacity by constructing an additional primary cell.
3. Expand storage capacity by constructing an addi-

tional secondary cell.

Because of the rugged, varying topography at the site located in the Silver Creek Valley, significant expansion of the facility will be difficult. In addition, because clay must be imported from a distance, construction costs will be even higher.

Any significant expansion, say to an extent required to support an equivalent population of over 1000, would certainly require that the present cells be abandoned in favor of an all new facility located at a more suitable site.

Section 5 - Solid Waste Disposal

5.01 Description of Facility

The Village has a single solid waste disposal facility. It is located in the southwest quarter of Section 15-19-28W. The site is on the north bank of the Silver Creek Valley.

5.02 Assessment

The facility is generally rated as adequate by public health officials. The groundwater pollution potential was rated low, with no surface water problems. The nearest residence is half a mile distant. The access road off PR 478 is considered fair.

A number of problem areas were identified. Site utilization is poor, with no effective system having been implemented as to active trench locations. Adequate earth covering is not provided on inactive trenches. The site is not fenced, and a four foot chain link fence should be constructed. At present, bulky metallic waste is not separated from the rest, although it should be and a separate area should be designated. There is no provision for liquid waste (septic tank pumpout effluent) although there should be. There is no control exercised over rodent and insect infestations.

5.03 Upgrading

The major physical upgrading required is fencing. Virtually all the other problem areas relate to essen-

tially administrative and operational matters which should be dealt with on the basis of revised municipal policies.

Section 6 - Internal Drainage

6.01 Description

Land within the community is drained by open ditches paralleling the roads. The sharp drop of 40 feet in elevation from the northeast to the southwest ensures generally adequate drainage.

6.02 Problem Areas

There are only a few identifiable problem areas. There is a localized low spot on the back side of lots facing the east corner of the intersection of Thacker and Fifth. A ditch has been proposed to run northwest across the golf course toward the old race track. Any other drainage route would disrupt existing built up areas, so any urban development (as has been proposed) of the golf course property should take this drainage situation into account.

Localized drainage has also been a problem along the north side of the south Government Road Allowance (PR478). A ditch has been proposed to be constructed to run east from Third Avenue to Jemima Street, where a 12 inch culvert would cross the G.R.A. roadway into a ravine which exists on the south side.

6.03 Future Development

There should be no difficulty draining any new urban developments provided that they are laid out to take advantage of the natural topography.

Section 7 - Transportation

7.01 External Roads

The Village is located on the northwest corner of the junction of PTH 16 (jointly with PTH 83) and PR478. PTH 16 is asphalt paved, and PR 478 is paved from PTH 16 west to the Saskatchewan border.

7.02 Internal Roads

Within the community, only a few streets are paved with asphalt, such as Russell Street and First Avenue, which are "grant-in-aid" roads cost shared by the Department of Highways. Most other streets are paved with gravel. Generally all streets are in fair to good condition with no significant problem areas.

7.03 Traffic

No traffic problem areas have been identified with the exception of the lack of a full length west turn lane from the northbound lane of PTH 16. The Council has requested Highways to construct such a lane to improve safe access from PTH 16 into the Village streets, but no action has yet been taken.

7.04 Parking

There is a potential parking problem area in the vicinity of the intersection of Russell Street and First Avenue. Presently, the CPR permits large scale parking on their property on the southwest side of First Avenue. If this is ever prohibited by a change

in CPR policy or land use, parking in this area would be very difficult, and this would affect the hotel and neighboring businesses. No other parking problems have been identified.

7.05 Roads in New Developments

Ideally, the recommendations of Section 7.06 of Part II of this Report should be implemented for Binscarth as well. However, recognizing that most Village streets are graveled, and that demand-based pricing for lots would probably not support construction of paving, it would seem more feasible to permit the continuing practice of constructing gravel roads with open ditches in all proposed new development areas.

8.0 GEOTECHNICAL

8.01 Topography

The Village of Binscarth is located about 100 feet above Silver Creek adjacent to the creek valley. The topography is gentle rolling with some minor depressions. There are no large depressions in the immediate vicinity of the Village. The topography slopes uniformly from a high of elevation 1765 feet at the northeastern corner of the Village down to elevation 1700 feet at the southwest corner. From here the topography drops off very sharply to elevation 1605 in the bottom of the valley.

8.02 Drainage

In the Village of Binscarth drainage generally follows the slope of the land which is towards Silver Creek. Only minor low areas exist within the Village boundaries and generally surface drainage is not considered a problem. Overall drainage is towards the southwest.

8.03 Soil Conditions

The soils in the Binscarth area generally consist of 40 to 170 feet of glacial till overlying up to 115 feet of medium to coarse sand with gravel over shale bedrock. The depth to bedrock varies from an outcrop east of the Village to in excess of 236 feet in the northeast corner of the Village. It appears that the Village is underlain by an old in-filled glacial valley less than a mile wide at the ground surface and more than 250 feet deep in the vicinity of the Village . The glacial till consists of

sand, clay and silt, interspersed with sand, gravel and shale layers up to ten feet thick.

Typically the soils within the Village limits consist of a thin layer of organic clayey silt over stiff to hard, low to medium plastic, sandy, silty clay with gravel (glacial till) interspersed with silty sand and gravel layers five to ten feet thick. In the northeast corner of the Village, the soil appears to be sandier and siltier than elsewhere.

Generally the till consists of 20 to 30 percent clay, 30 to 45 percent silt, 25 to 35 percent sand and five to 10 percent gravel. The till normally has a stiff to hard consistency. The till is moderately compressible and has a low to moderate swelling potential. It is generally not considered very frost susceptible, except in areas where the soil has a higher silt content with a high moisture content. The water table is generally well below the ground surface.

The shale is weathered and fractured. It is usually described as a clay shale. It has a high bearing capacity, which may decrease in the presence of excess moisture. The shale is generally considered to have a low to moderate swelling potential at shallow depths.

8.04 Foundation Considerations

Trenching conditions within the town limits are generally good. Where the soils are stiff to hard the side walls of water and sewer trenches should stand up. In those areas where the till is interspersed with relatively thick sand and gravel layers some sloughing of

trenches should be expected, especially during periods of high water table or heavy rains. Generally the water table is not expected to be a problem during trenching.

The water table is generally well below the ground surface. Localized areas of higher water tables may exist in low areas or where the sand and gravel layers are confined.

The glacial till has a stiff to hard consistency with a relatively high bearing capacity. It is low to moderately compressible with a low potential for swelling. The shale is very hard and has a high bearing capacity. It has a low to moderate potential for swelling if exposed to excess moisture. Generally shallow footings should be adequate for most single storey construction, although grade beam on cast-in-place piles should be considered where frost susceptibility is a concern. Construction in contact with the shale should provide for proper drainage.

The permeability of the till is relatively low.

The till and sand and gravel are generally not frost susceptible, except maybe in silty areas with excess moisture conditions.

Section 9 - Proposed Expansion Areas

9.01 General

Each of the proposed areas for which urban development may be possible, has been evaluated in terms of the ability of existing infrastructure to service them.

9.02 Golf Course Property

1. Background

It has been proposed to relocate the golf course to a new site in Section 10-19-28W, in the Silver Creek Valley, where topography would be more amenable to an interesting and challenging layout. This would leave the existing golf course property open for urban development. Combined with the unused agricultural society grounds, the property is bounded by the CPR north bound (to Russell/Inglis) right-of-way, the north Village boundary, a northwest-southeast line running off the end of Sixth Avenue, to Thacker Street, to a line parallel to and about 150 feet northeast of Fifth Avenue, to a line parallel to and about 300 feet northwest of Crerar (back side of rinks). Some 25 acres may be developed, providing some 125 lots each 50 feet wide by 120 feet deep.

2. Water

Water service may be provided off the end of Thacker at Fifth, off Thacker near Sixth, and off Third at Crerar. Six inch PVC mains, if looped, will be capable of delivering 400 Igpm fireflows throughout. Any addi-

tional development beyond 125 lots (500 equivalent population) will require that a watermain be built on First, north of Thacker, up to Third. A six inch PVC line here would permit northern development, supporting up to 1000 persons.

3. Sewer

Sewers in the golf course property may connect to manhole 35 (Thacker between Fifth and Sixth), 59 (Fifth at Crerar) or 28 (Third at Crerar). Eight inch PVC mains must be laid at minimum slope to ensure gravity service throughout the proposed development. The capacity of each existing sewer is adequate to handle the entire flow originating in the development, so there is complete design flexibility here.

4. Drainage

Prevailing natural drainage is toward the west and southwest. To ensure continued proper drainage, the initial stage of development should generally begin at the west end of the property and proceed eastward. Drainage ditches should be laid out to accommodate the proposed ditch from Thacker between Fifth and Sixth, which is proposed in Section 6.02 to solve an existing local problem area.

5. Traffic

Road access to the proposed development may be made conveniently from the north ends of First and Fifth Avenues, and from the existing Golf Club driveway off Thacker.

9.03 Southwest Area

1. Background

The area southwest of the CPR is suitable for commercial and light industrial use. The area is not large as it is near the edge of the Silver Creek Valley.

2. Water

Presently there is no water service here. There would be no problem providing 800 Igpm fireflows if an eight inch PVC main is constructed from the water plant, across the tracks. An appropriately higher capacity pump would be required at the plant, however.

3. Sewer

The Village's existing trunk line runs southwest across the CPR en route to the stabilization pond. All of the developable area can drain into manhole 41A.

4. Drainage

Natural drainage flows southwest into the valley. The development would take advantage of the natural drop in topography.

5. Traffic

Road access would be off PR 478 which crosses the CPR immediately northwest of the water plant. There is no other feasible access point.

9.04 South East Area

1. Water

The area bounded by PR 478, PTH 16 and the CPR, if serviced with six inch PVC mains, will deliver 400 Igpm fireflows for residential developments. Connections may be made to the existing mains on Second at Queen, or at any point along PTH 478.

If the commercial/light industrial development is contemplated, and 800 Igpm fireflows are required, an eight inch PVC feedermain would be required. It would be most conveniently routed from the water plant, southeast on First Avenue (where service to homes is presently provided by a 50 mm polyethylene main), thence east on Queen Street to PR 478, or directly into the development itself.

2. Sewer

Gravity sewer extensions are not possible in this area except for properties immediately adjacent to Queen Street and to PR 478. The topography drops toward the south, and the manholes on Queen and PR 478 are relatively shallow. Two alternative solutions are possible. One would be to construct a lift station, which could discharge into any convenient manholes such as 57 or 55. The other would be to construct a new gravity trunk main extension from the existing trunk main southwest of the CPR. Manhole 41A (to which southwest developments would connect) would be suitable. Location of such a main should be planned to coordinate with any proposed south-

west development. In any case, an eight inch PVC main would suffice to handle the potential flows originating in the southeast.

3. Drainage

The natural topography provides good drainage to the southwest. If this is taken into account in designing any development here, there will be no drainage problems.

4. Traffic

Road access is available off PR 478. If the development is residential in nature, access may also be made off Queen Street.

9.05 East Area

1. Water

Generally, pressure problems will exist in this area, and fireflows will be very limited. An eight inch PVC feeder all the way from the plant will be required for most residential and all commercial development n this area. In addition, development above elevation 1775 can not be contemplated, as a booster pumping station would be required, if fireflows are to be maintained.

Beyond the eight inch feeder, the branch mains would be six inch for residential or eight for commercial, to maintain 400 and 800 (respectively) Igpm fireflow capability. Again, if 800 Igpm fireflows are to be provided,

an appropriately upsized fire pump would be required at the plant.

2. Sewer

Theoretically, the eastern area is serviceable by gravity, but not from existing manholes 11 (Russell St.) or 47 (William St.), which are relatively shallow. Manhole 62 on James Street, just west of PTH 16, is relatively deep, and can service a large part of the eastern area. Service may also be provided from manhole 50 for a limited area. Beyond that, any trunk sewer extension into the southeast area (Sec. 8.04.2) could be extended eastward across PTH 16 to service more land than any other alternative described above. Phasing of developments would become a critical issue.

3. Drainage

The area drains radially in virtually all directions, as the Silver Creek Valley swings around it, bounding it to the east, south and southwest. Drainage for any developments should pose no problems if laid out in conformity with the natural topography.

4. Traffic

Road access is available from PTH 16 on the west and PR 478 on the south. A frontage road would be required on PTH 16 for any development facing the highway.

9.06 North East Area

1. Water

Problems with water pressure and limited fireflows will arise, if this area is developed unless a feeder-main (eight inch PVC) is built from the water plant, or a booster station is constructed. Internal servicing of residential streets could be on six inch branches off the eight inch feeder. For commercial developments, the branches would be eight inch.

2. Sewer

The existing sewer on Thacker is shallow. However, natural grade is available for a sewer connected back to MH 35, to provide gravity service to the northeast. This could either replace or parallel the existing shallow sewer.

3. Drainage

The topography provides natural drainage toward the southwest. Again, any development should be able to take advantage of this, to provide good internal drainage.

4. Traffic

Thacker Street is not constructed all the way to PTH 16, but a road could be extended along the right-of-way, to provide access to a northeast development. Alternative access could come from any proposed roads in the Golf Course development or off PTH 16.

Section 10 - Summary

10.01 General

This section summarizes the limitations of each of the existing infrastructure sectors, the scope of proposed upgrading schemes, estimated capital costs for each scheme, and the relative priority of each from a technical point of view.

10.02 Water

The water supply, treatment, storage, and pumping works are adequate for the existing population only, and significant development will require construction of a new well and a new plant and reservoir. The basic distribution grid is sound, and many developments can be accommodated with little upgrading required.

10.03 Wastewater

The wastewater stabilization pond is overloaded but the relative lack of concern by environmental authorities would relegate upgrading and expansion to a lower priority. The trunk sewer main to the pond is adequate for an equivalent population of 1350 persons. Capacity of other existing sewers to handle additional flows from new developments is not a concern, although some lines are too shallow to permit significant extensions to be made.

10.04 Solid Waste

There are a number of administrative and operational improvements which should be implemented for the waste disposal grounds. In addition, the site must be fenced.

10.05 Drainage

Aside from two minor localized problem areas, drainage is not a concern.

10.06 Transportation

With the exception of access on PTH 16 and parking near Russell Street and First Avenue, there are no transportation concerns.

10.07 Estimated Costs

The following table presents estimated capital costs of various schemes, including construction, engineering and contingency costs, and assuming anticipated 1986 construction cost levels.

VILLAGE OF BINSCARTH

Estimate of Costs - Upgrading General Services

1.	New Well (incl. electrical, mechanical, pipeline connection etc.)	$ 75,000.
2.	Line secondary pond cell	$ 100,000.
3.	New Water Plant	$ 250,000.
4.	Construct New Pond Cells	$ 150,000.
5.	Northwest 6" Watermain, First Avenue to Golf Course	$ 35,000.
6.	Northeast 8" Watermain, Plant to Thacker to PTH 16	$ 150,000.
7.	East Side 8" Watermain, Plant to PR 476 to PTH 16 to William	$ 125,000.
8.	Southwest 8" Watermain, Through CPR	$ 25,000.
9.	Southeast 8" Watermain, Plant to Queen to PR 476	$ 75,000.
10.	Northeast 8" Trunk Sewer, Thacker St., MH 35 to NE	$ 75,000.
11.	Southeast 8" Trunk Sewer, Through CPR to MH 41A	$ 75,000.

12.	Drainage Improvement, PR 476, Second Avenue to Jemima	$ 25,000.*
13.	Drainage Improvement, Thacker through Golf Course	$ 25,000.
14.	Turning Lane Construction, PTH 16	**
15.	Waste Disposal Ground Fence	$ 25,000.

* This item may be cost shared by Department of Highways. Items 1 through 11 are all cost shareable under MWSB programs.

** Costs for this item are the sole responsibility of the Department of Highways.

10.08 Priorities

In terms of relative priority, the proposed schemes are ranked as follows:

High Priority - no items were found to be of high priority, in terms of the community's present rate of development.

Medium Priority - New Well
- New Water Plant

Provisional High Priority (i.e., projects are high priority, if significant development takes place only in the area designated).

- Northeast Watermain and Trunk Sewer (Northeast Development)
- Southeast Watermain and Trunk Sewer (Southeast Development; watermain required for commercial fireflows only).
- Southwest Watermain (Southwest Development)
- East Side Watermain (Eastside Development).

Provisional Medium Priority

- Northwest Watermain (only required if Golf Course development exceeds 500 equivalent population.

APPENDIX A

TERMS OF REFERENCE

Proposed Development Plan - Engineering Studies

TERMS OF REFERENCE

The following areas are to be investigated for both the Town of Russell and Village of Binscarth:

1. To review and update existing engineering studies on the sewage, water and storm drainage facilities.

2. To assess the condition and capabilities of the existing municipal facilities of servicing undeveloped areas within the two urban areas and lands immediately adjacent to them.

3. To study and suggest directions for future expansion of these municipal services.

4. To prepare a conceptual analysis of the sewer, water, storm drainage and sewer and water treatment facilities.

5. To examine the existing transportation system and standards and perform a conceptual study of the future transportation requirements, including an examination of the street net work, parking and other transit facilities.

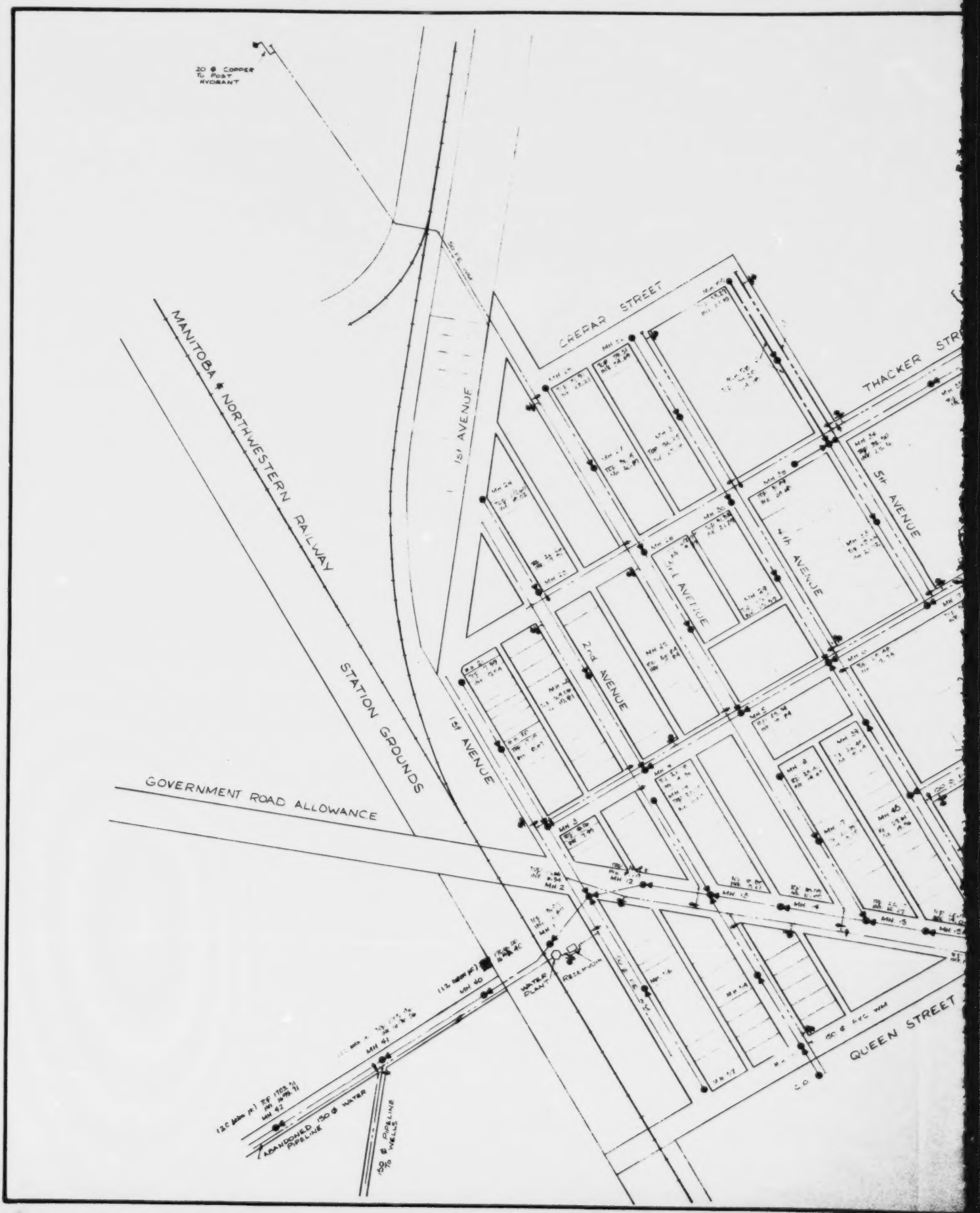
6. To provide cost estimates of capital construction of municipal facilities for a 5 year program.

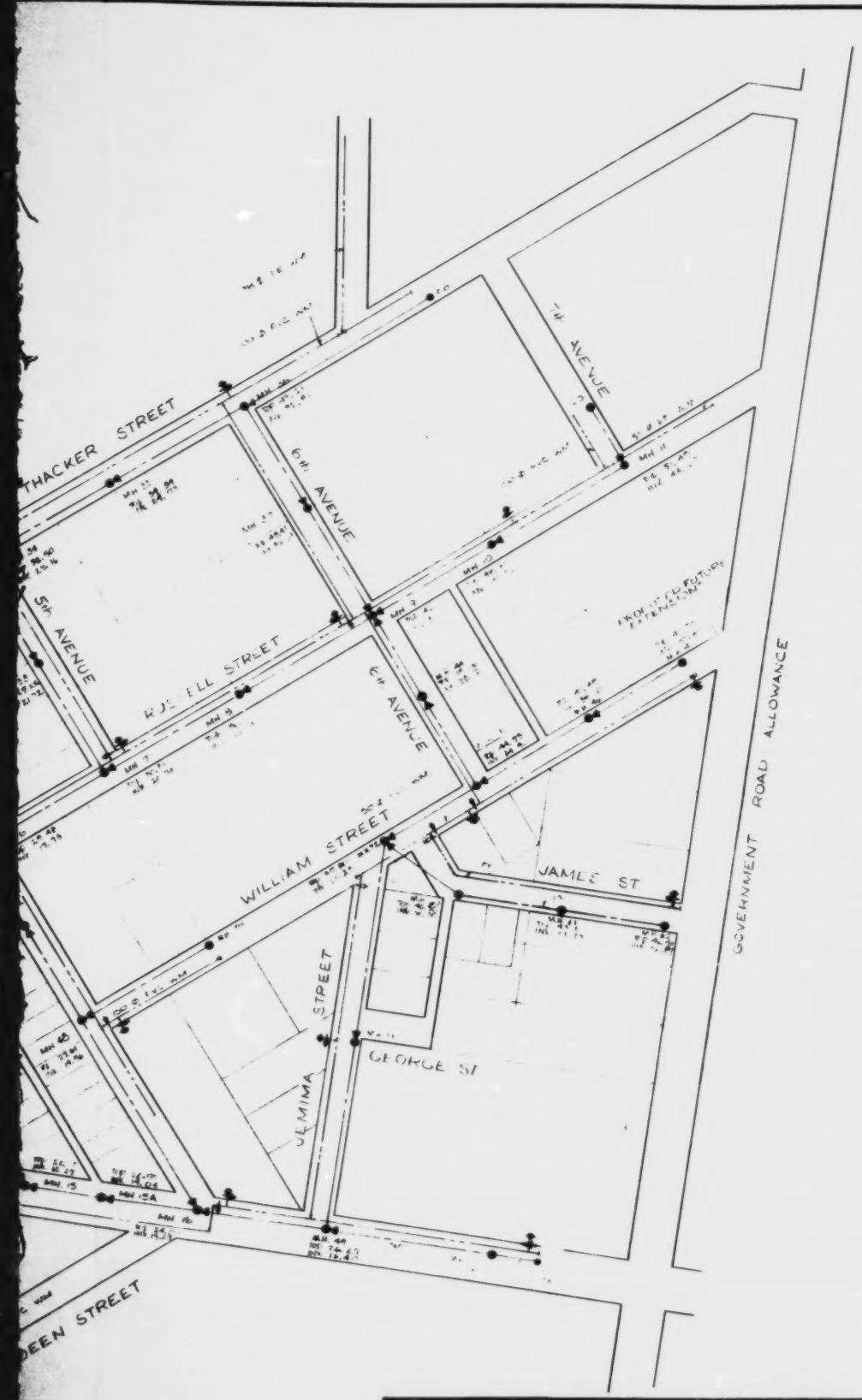
7. To review existing municipal standards and development administration and outline improvements.

8. To prepare a report on the above and attend hearings on the implementation of the plan.

The above Engineering Study is to be co-ordinated by Dauphin Office of the Municipal Planning Branch who shall advise the consultant of the scheduling of the work and assist the consultant with base plans and background data for the preparation of the Development Plan.

It is understood that the above work will be basically conceptual and detailed designs will be prepared at the time of development.


20 Ø COPPER TO POST HYDRANT
MANITOBA & NORTHWESTERN RAILWAY
STATION GROUNDS
GOVERNMENT ROAD ALLOWANCE
CEDAR STREET
THACKER STR
1st AVENUE
2nd AVENUE
3rd AVENUE
4th AVENUE
5th AVENUE
QUEEN STREET
WATER PLANT
RESERVOIR
ABANDONED 150 Ø WATER PIPELINE
150 Ø PIPELINE WELLS



LEGEND

- EXISTING SEWER
- EXISTING SEWER CLEANOUT (CO)
- EXISTING MANHOLE
- EXISTING WATERMAIN
- EXISTING VALVE
- EXISTING HYDRANT

NOTES

ALL SEWER PIPES ARE VITRIFIED CLAY (200 ϕ, 8") AND ALL WATERMAINS ARE 150ϕ(6") IRON UNLESS OTHERWISE SHOWN

ALL TOP OF ELEVATIONS ARE ASSUMED

M.H. INVERT ELEVATIONS NOT AVAILABLE FOR MH 48, 49, 54, 55, 96, 97.

PROVINCE OF MANITOBA
W. H. BRANT
REGISTERED ENGINEER

A.J. POETKER & ASSOCIATES LTD.
ENGINEERING CONSULTANTS
WINNIPEG, MANITOBA

DESIGNED BY: W.H. BRANT	DRAWN BY: C.G.M. / C.M.
APPROVED BY:	CHECKED BY:
DATE: MARCH 24, 1982	SCALE: 1:2000

CLIENT: RUSSELL BINSCARTH PLANNING DISTRICT

PROJECT: VILLAGE OF BINSCARTH

DESCRIPTION: EXISTING WATER AND SEWER SERVICES

SHEET 1 OF 1

DWG. No.: 016-01-03-L8

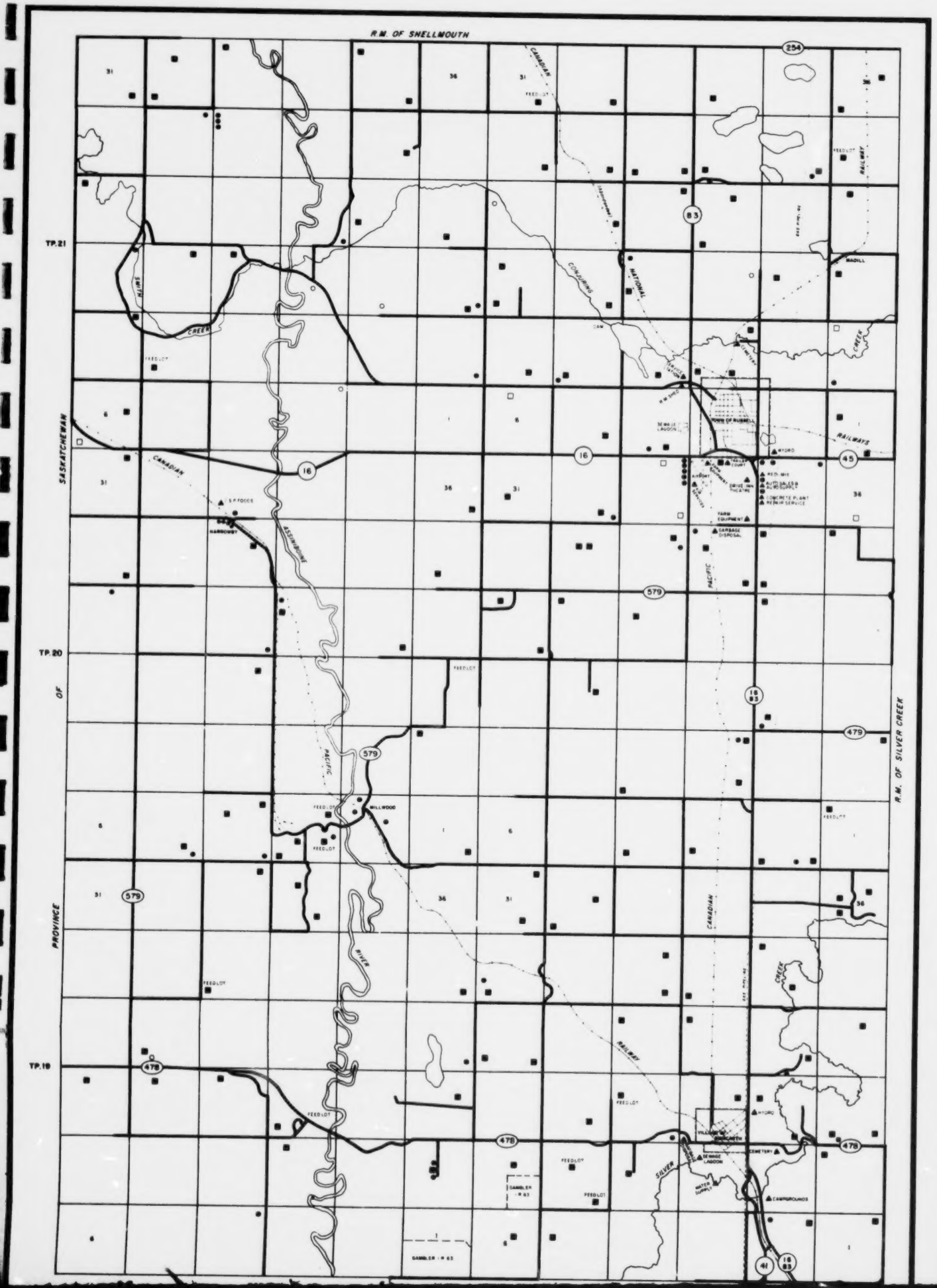
APPENDIX "A"

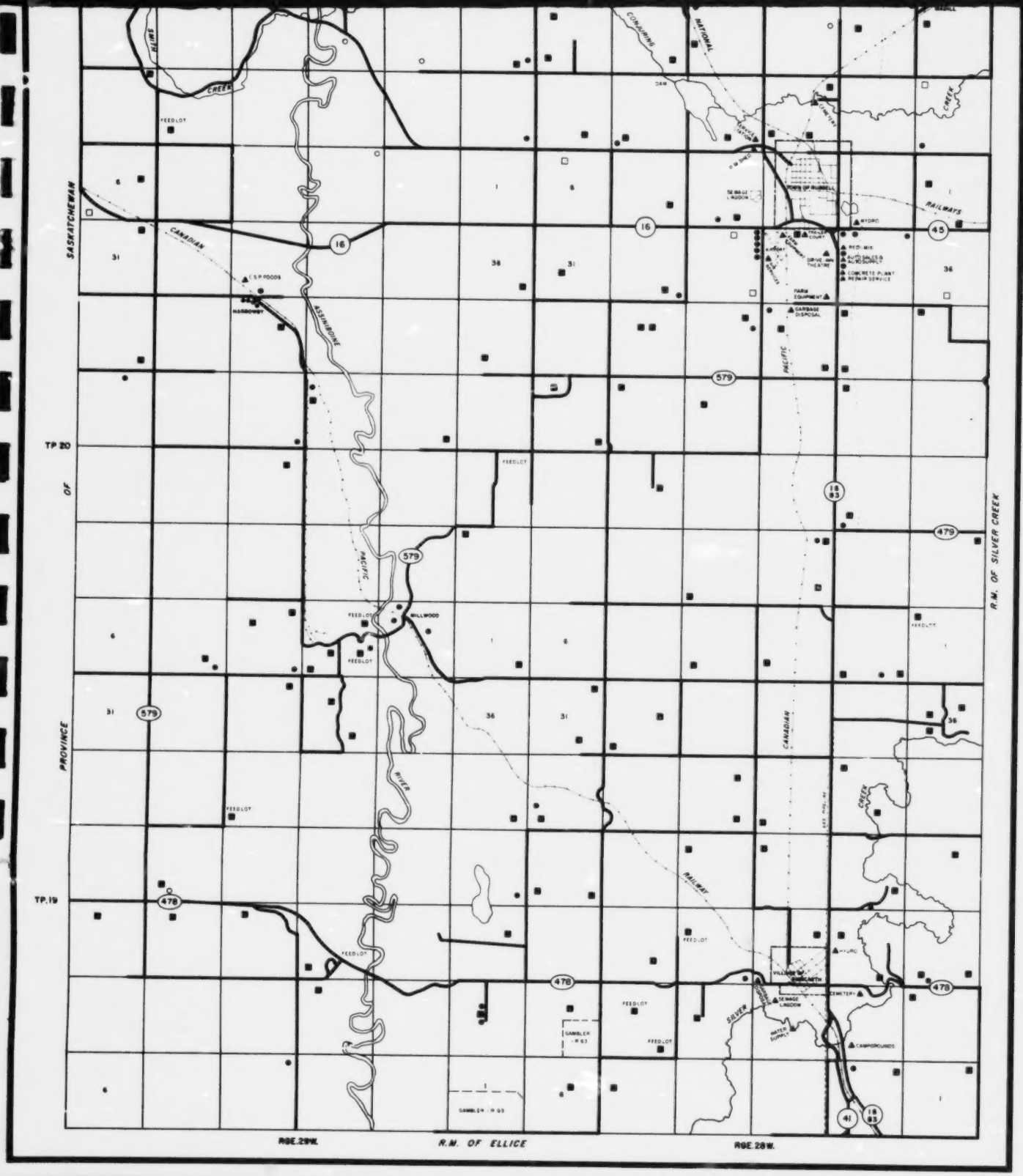
APPENDIX

The following reports were submitted to the Russell-Binscarth Planning District for consideration and are considered to be a part of this report. Copies of these reports are to be found at the Planning District Office.

The reports are:

Department of Natural Resources	-	"Planning Report on Natural Resources"
	-	"Recommended Fish Protection Procedures for Stream Crossings in Manitoba, 1984";
Department of Agriculture	-	"Agricultural Background Study of The Russell-Binscarth Planning District";
Department of Energy & Mines	-	"Aggregate Resources in the Rural Municipality of Russell: Resource Management and Pit Rehabilitation Proposal for Land Use Planning"
		"The Manitoba Potash Project";
Department of Highways and Transportation	-	"Input to The Russell-Binscarth Planning District Development Plan";
Dept. of Culture, Heritage & Recreation	-	"Basic Policy Statement Relative to Heritage Resources".


R.M. OF SHELLMOUTH
TP.21
TP.20
TP.19
SASKATCHEWAN
PROVINCE
OF
R.M. OF SILVER CREEK
CANADIAN
NATIONAL
PACIFIC
RAILWAYS
RAILWAY
RIVER
CREEK
SILVER
ASSINIBOINE
HARROWBY
WILLOWOOD
FEEDLOT
CAMPGROUNDS
CEMETERY
SEWAGE LAGOON
WATER SUPPLY
AIRPORT
GARBAGE DISPOSAL
CONCRETE PLANT
REPAIR SERVICE
16
254
83
45
579
479
478
41



LAND USE
R.M. OF RUSSELL

RUSSELL-BINSCARTH PLANNING DISTRICT

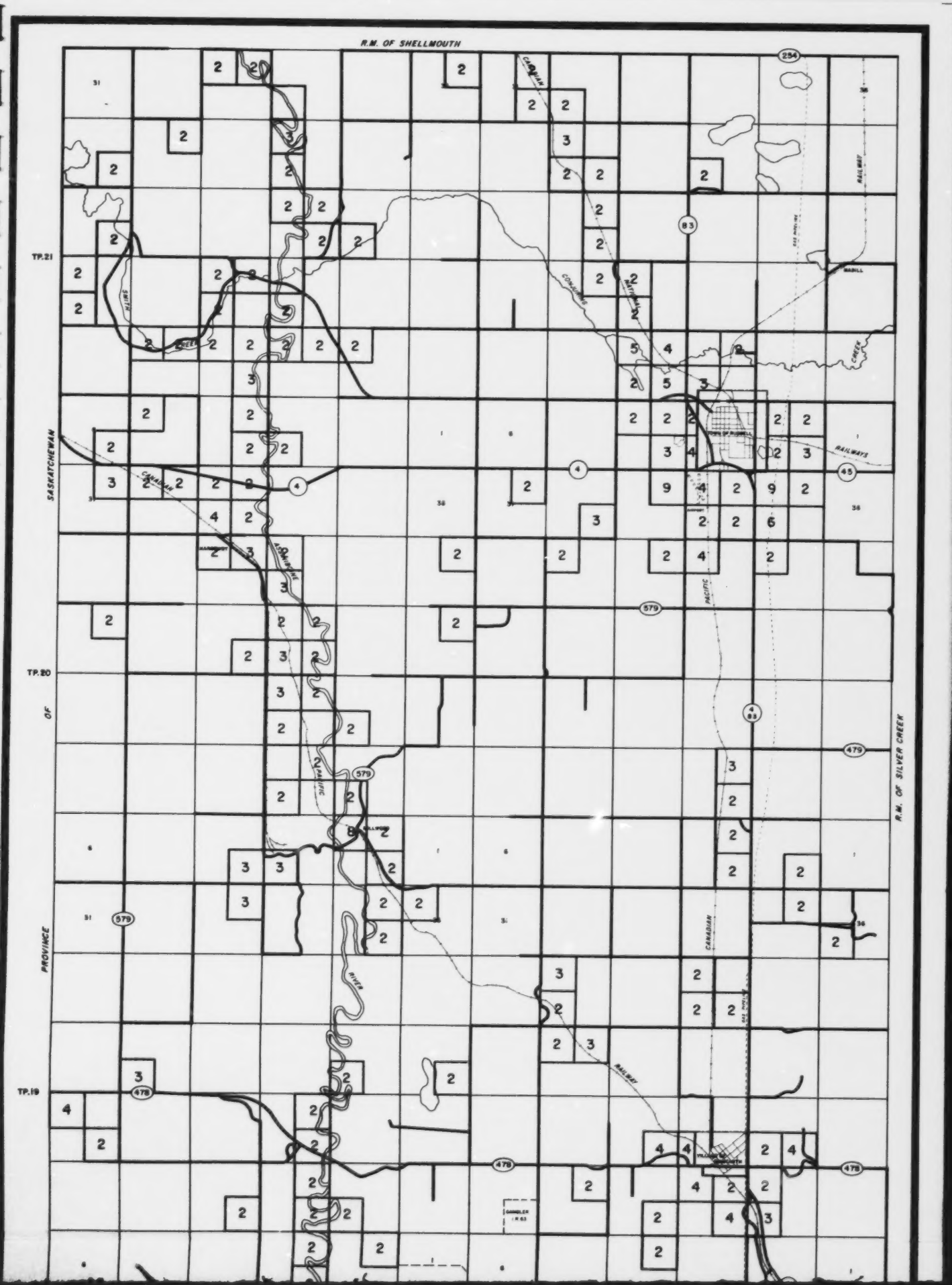
LEGEND
- ■ Resident Farm Buildings
- □ Vacant Farm Buildings
- ● Taxable Dwelling
- ○ Vacant Dwelling
- ▲ Land Use As Indicated

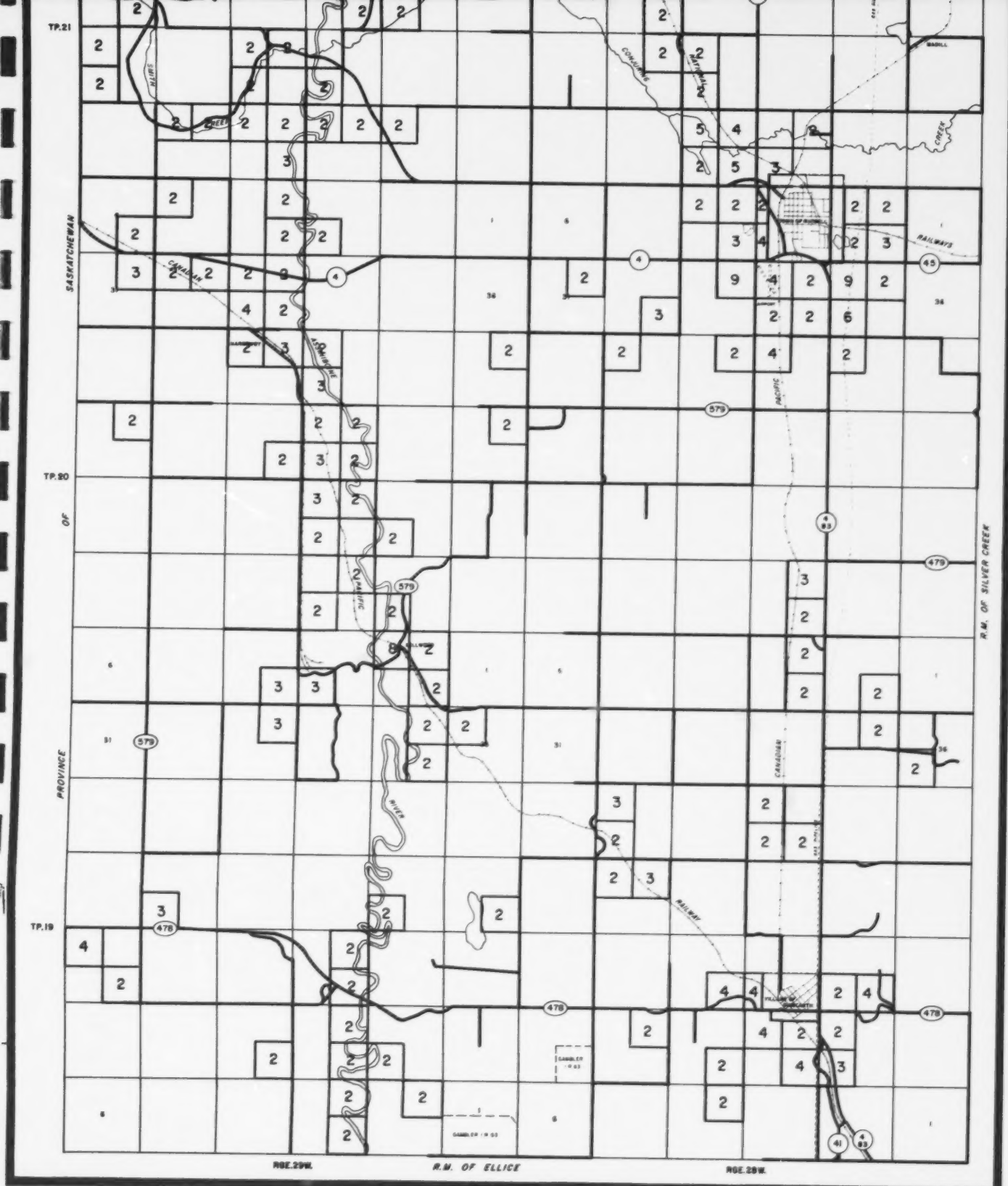
MAP 3

Scale 1:50,000

N

Manitoba
Municipal Affairs
Municipal Planning


R.M. OF SHELLMOUTH
TP.21
TP.20
TP.19
SASKATCHEWAN
PROVINCE
OF
R.M. OF SILVER CREEK
CANADIAN PACIFIC RAILWAY
CANADIAN NATIONAL RAILWAYS
ASSINIBOINE RIVER
SWAN RIVER
CREEK
BIRCH
MARCH
254
83
4
45
579
479
478



LAND FRAGMENTATION
R.M. OF RUSSELL

MAP 4

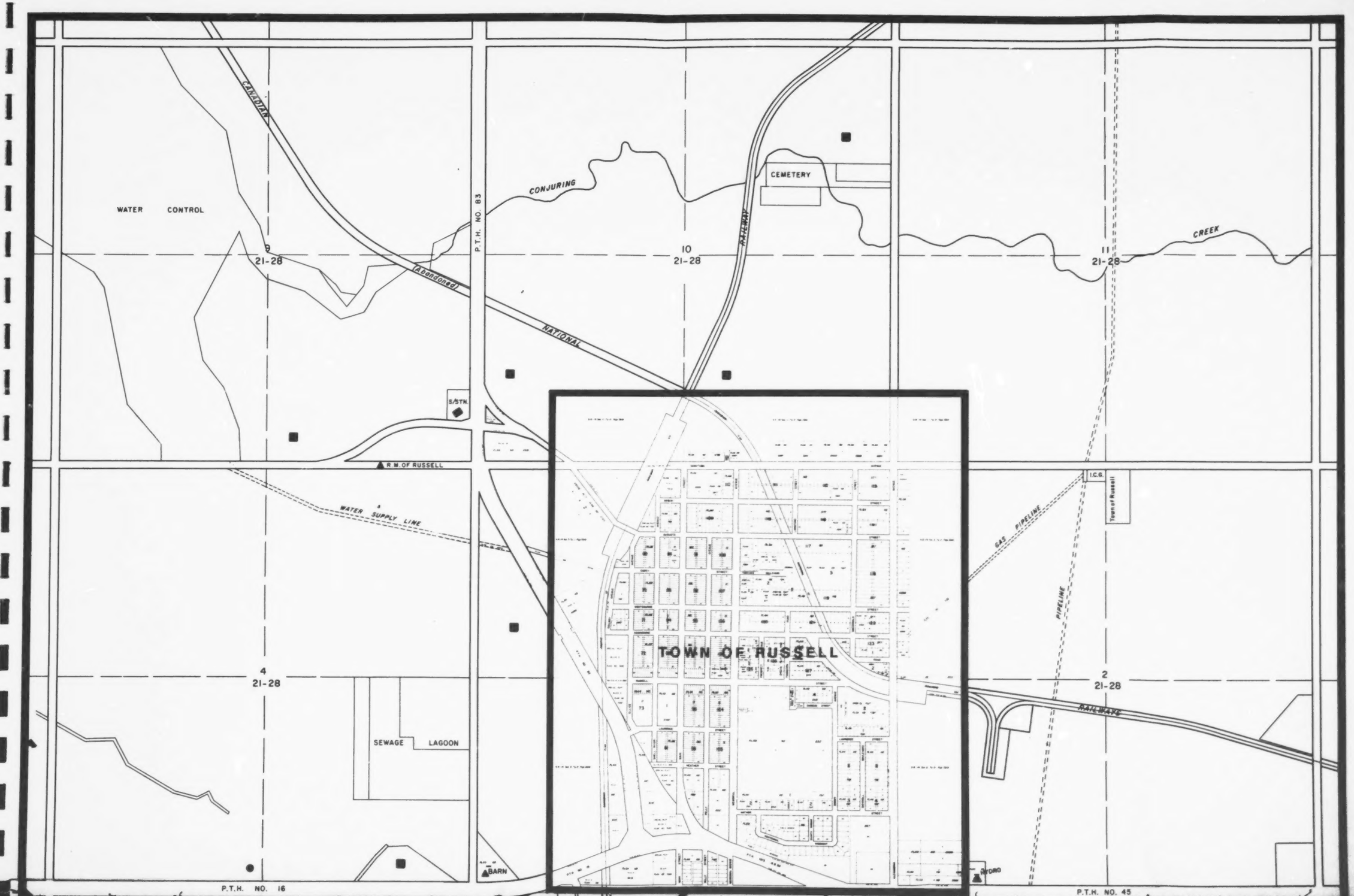
LEGEND [3] Splits Per Quarter Section

0 1 2
Scale in Miles

N

RUSSELL-BINSCARTH PLANNING DISTRICT

Manitoba
Municipal Affairs
Municipal Planning


CANADIAN
(Abandoned)
NATIONAL
P.T.H. NO. 83
CONJURING
CEMETERY
A.A. HWY
CREEK
WATER CONTROL
9
21-28
10
21-28
11
21-28
S/STN.
R.M. OF RUSSELL
WATER SUPPLY LINE
4
21-28
SEWAGE LAGOON
BARN
TOWN OF RUSSELL
I.C.G.
Town of Russell
GAS PIPELINE
PIPELINE
2
21-28
RAILWAYS
HYDRO
P.T.H. NO. 16
P.T.H. NO. 45

FRINGE DEVELOPMENT TOWN OF RUSSELL

RUSSELL-BINSCARTH PLANNING DISTRICT

CANADIAN

CONJURING

CEMETERY

P.T.H. NO. 83

RAILWAY

CREEK

Abandoned

NATIONAL

9
21-28

10
21-28

11
21-28

S/STN

R.M. OF RUSSELL

WATER SUPPLY LINE

TOWN OF RUSSELL

I.C.G.

Town of Russell

GAS PIPELINE

PIPELINE

4
21-28

2
21-28

RAILWAYS

SEWAGE LAGOON

BARN

HYDRO

P.T.H. NO. 16

P.T.H. NO. 45

LEGEND

- Resident Farm Buildings
- Vacant Farm Buildings
- Taxable Dwelling
- Land Use As Indicated

P.T.H. NO. 16

P.T.H. NO. 45

R.M. OF RUSSELL

WATER SUPPLY LINE

4
21-28

SEWAGE LAGOON

BARN

TOWN OF RUSSELL

I.C.G.

Town of Russell

GAS PIPELINE

PIPELINE

2
21-28

RAILWAYS

HYDRO

P.T.H. NO. 16

P.T.H. NO. 45

TRAILER COURT

HANGERS

TOWN OF RUSSELL FARM EQUIPMENT

RUSSELL

PACIFIC

REDI-MIX

AIR SERVICES

AIRPORT

DRIVE-INN THEATRE

645

AUTO SALES & AUTO SUPPLY

CONCRETE PLANT

REPAIR SERVICE

P.T.H. NO. 16 & 83

33
20-28

34
20-28

35
20-28

CANADIAN

FARM EQUIPMENT

GARBAGE DISPOSAL

LEGEND

Res

Vac

Tax

Lan

1/4 1/8

Scale

Manitob

Municipa

Municipal

R.M. OF RUSSELL

WATER SUPPLY LINE

TOWN OF RUSSELL

GAS PIPELINE

PIPELINE

I.C.G. Town of Russell

4
21-28

2
21-28

RAILWAYS

SEWAGE LAGOON

BARN

HYDRO

P.T.H. NO. 16

P.T.H. NO. 45

TRAILER COURT

HANGERS

TOWN OF RUSSELL FARM EQUIPMENT

REDI-MIX

RUSSELL

PACIFIC

AIR SERVICES

AIRPORT

DRIVE-IN THEATRE

AUTO SALES & AUTO SUPPLY

CONCRETE PLANT

REPAIR SERVICE

P.T.H. NO. 16 & 83

645

33
20-28

34
20-28

35
20-28

FARM EQUIPMENT

GARBAGE DISPOSAL

I.C.G.R.R.

LEGEND

- ■ Resident Farm Buildings
- □ Vacant Farm Buildings
- ● Taxable Dwelling
- ▲ Land Use As Indicated

MAP 5

1/4 1/8 0 1/4

Scale in Miles

N

Manitoba
Municipal Affairs
Municipal Planning

S.W. 1/4 Sec. 10, Tp. 21, Rge. 28W.
S.E. 1/4 Sec. 10, Tp. 21, Rge. 28W.
S.W. 1/4 Sec. 11, Tp. 21, Rge. 28W.
N.W. 1/4 Sec. 3, Tp. 21, Rge 28W
N.W. 1/4 Sec. 2, Tp. 21, Rge. 28W.
PLAN NO. 2681
PLAN NO. 7419
PLAN NO. 6709
PLAN NO. 9007
PLAN NO. 6723
PLAN NO. 7695
PLAN NO. 7387
PLAN NO. 5888
PLAN NO. 3048
PLAN NO. 5048
PLAN NO. 5108
PLAN NO. 9045
PLAN NO. 7098
PLAN NO. 7327
PLAN NO. 7330
PLAN NO. 6390
PLAN NO. 6214
PLAN NO. 6398
PLAN NO. 6347
PLAN NO. 6462
PLAN NO. 6215
PLAN NO. 6294
PLAN NO. 6295
PLAN NO. 5403
PLAN NO. 5304
PLAN NO. 4723
PLAN NO. 3980
PLAN NO. 7805
PLAN NO. 7723
PLAN NO. 7724
PLAN NO. 4065
PLAN NO. 4067
PLAN NO. 4068
PLAN NO. 4069
PLAN NO. 4070
PLAN NO. 4071
PLAN NO. 4072
PLAN NO. 4073
PLAN NO. 4074
PLAN NO. 4075
PLAN NO. 4076
PLAN NO. 4077
PLAN NO. 4078
PLAN NO. 4079
PLAN NO.

LAND USE
TOWN OF RUSSELL

RUSSELL-BINSCARTH PLANNING DISTRICT

LEGEND

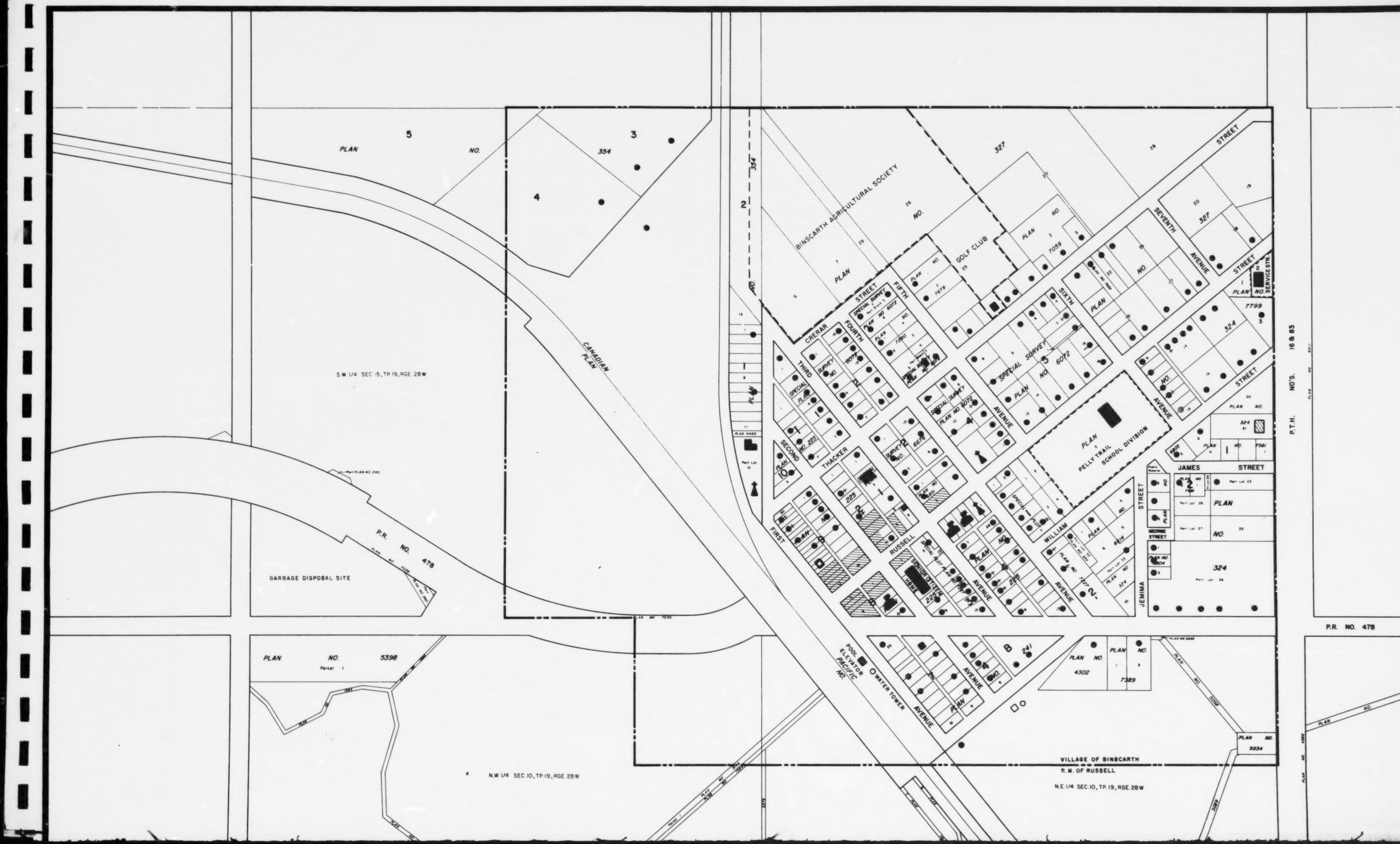
- Single-Family Dwelling
- Multiple-Family or Apartment
- Mobile Home
- Commercial
- Public Building
- Church
- Farm Buildings
- Industrial
- Land Use As Indicated
- Halls, Clubs and Lodges

MAP 7

200 0 200 400
Scale in Feet

N

Manitoba
Municipal Affairs
Municipal Planning


PLAN 5 NO. 354
3
4
2
394
S.W. 1/4 SEC. 15, TP. 19, RGE. 28W
CANADIAN PLAN
P.R. NO. 478
GARBAGE DISPOSAL SITE
PLAN NO. 5398
Parcel 1
N.W. 1/4 SEC. 10, TP. 19, RGE. 28W
BINSCARTH AGRICULTURAL SOCIETY
PLAN 29 NO.
GOLF CLUB
327
PLAN 7059 NO.
PLAN 7479 NO.
STREET
SPECIAL SURVEY PLAN NO. 6012
FIFTH
FOURTH
THIRD
SECOND
CRERAR
SPECIAL PLAN NO. 225
THACKER
RUSSELL
FIRST
SURVEY NO. 6678
SPECIAL SURVEY PLAN NO. 6073
AVENUE
SEVENTH
SIXTH
PLAN NO. 6012
PLAN NO. 7799
PLAN NO. 324
PLAN NO. 7581
PLAN PELLY TRAIL SCHOOL DIVISION
JAMES STREET
GEORGE STREET
WILLIAM
JEMIMA
PLAN NO. 7427
PLAN NO. 4618
PLAN NO. 5034
PLAN NO. 4302
PLAN NO. 7389
POOL ELEVATOR PACIFIC NO.
WATER TOWER
VILLAGE OF BINSCARTH
R.M. OF RUSSELL
N.E. 1/4 SEC. 10, TP. 19, RGE. 28W
P.T.H. NO'S. 16 & 83
P.R. NO. 478

PLAN NO. 5
PLAN NO. 354
3
4
2
354
BINSCARTH AGRICULTURAL SOCIETY
PLAN NO. 29
GOLF CLUB
PLAN NO. 2 7059
327
STREET
SEVENTH AVENUE
PLAN NO. 1 7799
SERVICE STN.
CREAR
FOURTH
FIFTH
SPECIAL SURVEY PLAN NO. 6072
PLAN NO. 7879
SIXTH
SPECIAL SURVEY PLAN NO. 6072
PLAN NO. 32
PLAN NO. 324
THIRD
SECOND
PLAN NO. 10
SPECIAL PLAN NO. 223
THACKER
SURVEY PLAN NO. 6678
AVENUE
PLAN NO. 19
PLAN NO. 7381
PLAN NO. 21
PLAN NO. 20
PLAN NO. 18
PELLY TRAIL SCHOOL DIVISION
JAMES STREET
WILLIAM
RUSSELL
FIRST
SENIOR CITIZENS HOME
PLAN NO. 324
PLAN NO. 7777
PLAN NO. 6424
PLAN NO. 6504
GEORGE STREET
JEMIMA
PLAN NO. 26
Part Lot 23
Part Lot 25
Part Lot 27
Part Lot 26
POOL ELEVATOR PACIFIC NO.
WATER TOWER
PLAN NO. 4302
PLAN NO. 7389
PLAN NO. 3034
VILLAGE OF BINSCARTH
R.M. OF RUSSELL
N.E. 1/4 SEC. 10, TP. 19, RGE. 28 W
S.W. 1/4 SEC. 15, TP. 19, RGE. 28 W
N.W. 1/4 SEC. 10, TP. 19, RGE. 28 W
CANADIAN PACIFIC
P.R. NO. 478
GARBAGE DISPOSAL SITE
PLAN NO. 5398
Parcel 1
Part Plan No. 240
Plan No. 7338
Plan No. 7033
P.T.H. NO. 16 & 83
PLAN NO. 5088
PLAN NO. 4889

LAND USE
VILLAGE OF BINSCARTH

RUSSELL-BINSCARTH PLANNING DISTRICT

LEGEND

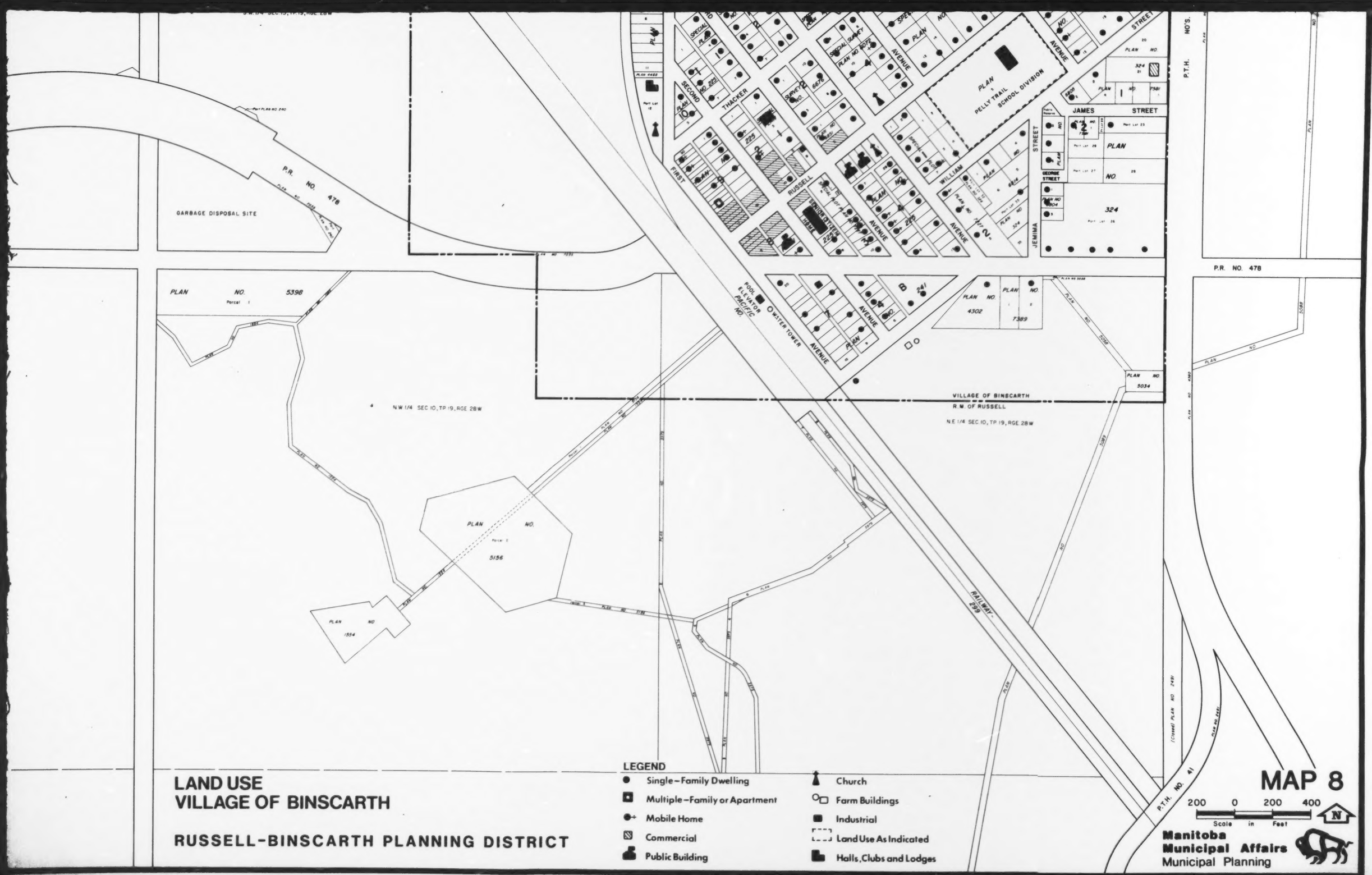
- Single-Family Dwelling
- Multiple-Family or Apartment
- Mobile Home
- Commercial
- Public Building
- Church
- Farm Buildings
- Industrial
- Land Use As Indicated
- Halls, Clubs and Lodges

MAP 8

200 0 200 400

Scale in Feet

Manitoba
Municipal Affairs
Municipal Planning



LAND USE
VILLAGE OF BINSCARTH

RUSSELL-BINSCARTH PLANNING DISTRICT

LEGEND

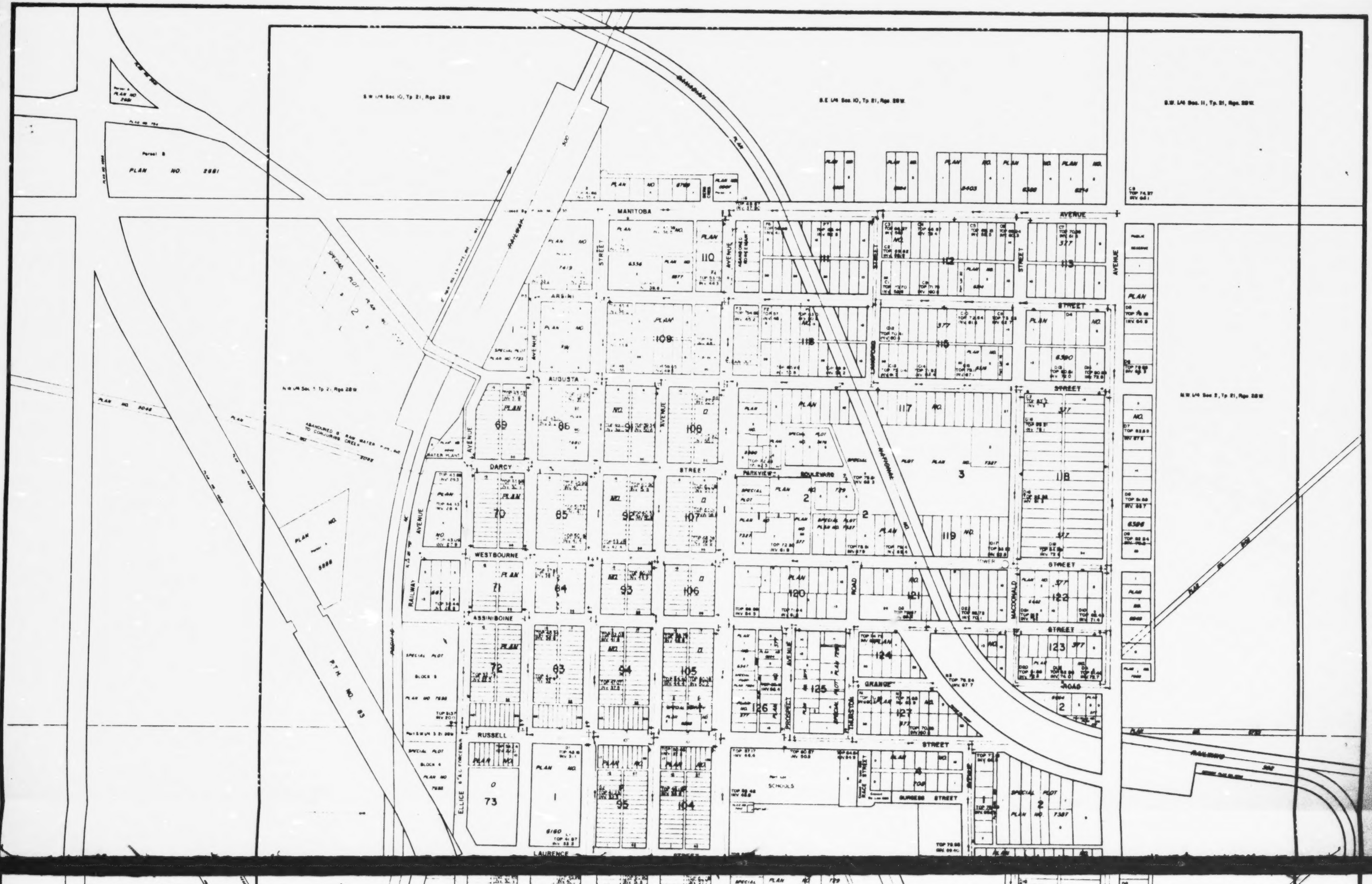
- Single-Family Dwelling
- Multiple-Family or Apartment
- Mobile Home
- Commercial
- Public Building
- Church
- Farm Buildings
- Industrial
- Land Use As Indicated
- Halls, Clubs and Lodges

MAP 8

200 0 200 400
Scale in Feet

N

Manitoba Municipal Affairs
Municipal Planning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S.W. 1/4 Sec. 11, Tp. 21, Rge. 28 W.
N.W. 1/4 Sec. 1, Tp. 21, Rge. 28 W.
N.W. 1/4 Sec. 2, Tp. 21, Rge. 28 W.
Parcel B
PLAN NO. 2681
MANITOBA
AVENUE
STREET
ASSINIBOINE
AUGUSTA
DARCY
WESTBOURNE
RUSSELL
LAURENCE
PARKVIEW
BOULEVARD
GRANGE
ROAD
MACDONALD
PROSPECT
THURSTON
BURGESS
RAILWAY
SPECIAL PLOT
SCHOOLS
PUBLIC RESERVE
RAILWAY
PTH NO. 83

TOWN OF RUSSELL

A.J. POETKER & ASSOCIATES LTD. ENGINEERING CONSULTANTS	RUSSELL BINSCARTH PLANNING DISTRICT
	ENGINEERING BACKGROUND STUDY
	EXISTING WATER & SEWER
DESIGNED BY: W.T.B. DRAWN BY: L.S. APPROVED BY: CHECKED BY: DATE: OCTOBER, 1980 SCALE:	SHEET OF DRG. No.: 085-02-02 L4

LEGEND
EXISTING SEWER
EXISTING SEWER CLEAN OUT
EXISTING MANHOLE
EXISTING WATERMAIN
EXISTING VALVE
EXISTING HYDRANT

NOTE
ALL WATERMAINS ARE 6"
ALL SEWERS ARE 8"
UNLESS OTHERWISE NOTED
MANHOLE TOP ELEVATIONS ARE AS PER ORIGINAL DESIGN AND MAY HAVE BEEN ADJUSTED SUBSEQUENTLY

Province of Manitoba
Department of Municipal Affairs
Municipal Planning Branch
Dauphin Manitoba